SYLLABUS

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**
1.6 Study programme / Qualification	**Bioinformatics applied in life sciences**

2. Information regarding the discipline

2.1 Name of the discipline (en) (ro)			**Curricular internship** **Practică de specialitate**				
2.2 Course coordinator			**Prof. Banciu Horia Leonard, PhD**				
2.3 Seminar coordinator			**Prof. Banciu Horia Leonard, PhD**				
2.4. Year of study	**2**	2.5 Semester	**4**	2.6. Type of evaluation	**PV**	2.7 Type of discipline	**Compulsory**
2.8 Code of the discipline		**BME1141**					

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

3.1 Hours per week	14	Of which: 3.2 course	0	3.3 seminar/laboratory	14
3.4 Total hours in the curriculum	196	Of which: 3.5 course	0	3.6 seminar/laboratory	196

Time allotment:	hours
Learning using manual, course support, bibliography, course notes	34
Additional documentation (in libraries, on electronic platforms, field documentation)	41
Preparation for seminars/labs, homework, papers, portfolios and essays	20
Tutorship	54
Evaluations	4
Other activities:	-

3.7 Total individual study hours	154
3.8 Total hours per semester	350
3.9 Number of ECTS credits	14

4. Prerequisites (if necessary)

4.1. curriculum	• Big Data Processing and Applications; • Intelligent algorithms in Bioinformatics
4.2. competencies	• Theoretical and applicative knowledge in the master specialization Knowledge of modelling of relevant applications; • Knowledge and skills in biological data analysis.

5. Conditions (if necessary)

5.1. for the course	• Not applicable
5.2. for the seminar /lab activities	The hosting institution should provide at least the following resources: • Scientific references for the scientific problem to be investigated • Relevant data to help in the validation of any software implementation • Fully licensed computer space .

6. Specific competencies acquired

Professional competencies	• Identification of appropriate methodologies for software development in bioinformatics; • Use of methodologies, specification mechanism and development frameworks for developing bioinformatic applications • Development of dedicated bioinformatics projects
Transversal competencies	• Application of efficient work rules and responsible attitudes towards the scientific domain, for the creative exploitation of one's own potential according to the principles and rules of professional ethics • Efficient conduct of activities organized in an interdisciplinary group and development of empathic capacity of interpersonal communication, networking and collaboration with diverse groups • Use of efficient methods and techniques for learning, information, research and development of abilities for knowledge exploitation, for adapting to the needs of a dynamic society and for communication in a widely used foreign language.

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

7.1 General objective of the discipline	Gaining skills of team working for developing a software or generating results and the subsequent documentation writing under the coordination of the practice partners and the guiding tutor.
7.2 Specific objective of the discipline	Creating a data analysis program in a team or solving a bioinformatics problem starting from the available data Preparation of a report Presentation of the application / results

8. Content

8.1 Course	Teaching methods	Remarks
8.2 Seminar / laboratory	Teaching methods	Remarks
Stage 1 Establish the problem statement to be solved. Study the theoretical implications.	Exposure, description, explanation	
Stage 2 Establish the scientific methods and models to pursue Scientific investigation on the methods and models and their suitability for the task	Dialog lecture, discussions, team debate	
Stage 3 Develop detailed specifications of the project Project analysis: entities and relations identification, use scenarios, data flow diagrams	Dialog lecture, discussions, team debate	
Stage 4 Design : conceptual data model, logical data model, computation design, physical data model, user interface, application architecture Implementation and testing.	Questioning, discovery	
Stage 5 Integration, testing experiments, data collection, results evaluation	Case study, cooperation, questioning	
Stage 6 Reporting of the developed application or scientific results	Evaluation	

Bibliography

1. Heath, L. S., & Ramakrishnan, N. (Eds.). (2010). Problem solving handbook in computational biology and bioinformatics (No. 784). Springer Science & Business Media.

2. Sperschneider, V. (2008). Bioinformatics: problem solving paradigms. Springer Science & Business Media.
3. Electronic resources of literature and software, specific online databases for investigating the research topic.

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 provides an overview of several directions of study in bioinformatics, provides the student with a general expertise in bioinformatics.
• The course provides basic knowledge about teamwork and integration into the labor market

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course			
10.5 Seminar/lab activities	Project evaluation	The institution tutor assesses the performance of the interns. The faculty mentor assesses the activities (based on Activity Report)	80% 20%
10.6Minimum performance standards			
Each student must demonstrate that an acceptable level of knowledge and understanding of the field was reached, that he/she is able to communicate knowledge in a coherent way, that he/she has the ability to establish certain connections and to use knowledge in solving problems. • For promotion it is necessary to obtain a grade of at least 5.			

Date	Signature of course coordinator	Signature of seminar coordinator
16.01.2023	**Prof. Horia Banciu, PhD**	**Prof. Horia Banciu, PhD**

Date of approval — Signature of the head of department

20.01.2023 — **Assoc. Prof. Beatrice Kelemen**