

COURSE DESCRIPTION

Applied biostratigraphy

Academic year 2026-2027

1. Programme-related data

1.1. Higher Education Institution	Babeş-Bolyai University
1.2. Faculty	Faculty of Biology and Geology
1.3. Department	Department of Geology
1.4. Field	Geology
1.5. Level of study	Master
1.6. Degree programme / Qualification	Geology of Energy Resources
1.7. Form of education	With frequency

2. Course-related data

2.1. Course title	Applied biostratigraphy			Course code	BME1141
2.2. Course coordinator	Dr. Raluca Haitonic, Lecturer Dr. Lóránd Silye, Assoc. Prof. Dr. George Pleş, Lecturer Dr. Carmen Chira, Assoc. Prof. Dr. Szabolcs Kövecsi, Lecturer Dr. Ioan Tanţău, Prof.				
2.3. Seminar coordinator	Dr. Raluca Haitonic, Lecturer Dr. Lóránd Silye, Assoc. Prof. Dr. George Pleş, Lecturer Dr. Carmen Chira, Assoc. Prof. Dr. Szabolcs Kövecsi, Lecturer Dr. Ioan Tanţău, Prof.				
2.4. Year of study	2	2.5. Semester	4	2.6. Type of assessment	Exam
2.7. Course status	Optional		2.8. Course type	Specialisation subject	

3. Total estimated time (hours per semester of teaching activities)

3.1. Number of hours per week	4	of which: 3.2. course	2	3.3. seminar/ laboratory/ project	2
3.4. Total of hours in the curriculum	56	of which: 3.5. course	28	3.6. seminar/ laboratory	28
Time allocation for individual study (IS) and self-taught activities (ST)					hours
Learning from textbooks, course materials, bibliography, and notes (IS)					40
Additional research in the library, on subject-specific electronic platforms, and on-site					40
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					50
Tutoring (professional guidance)					10
Examinations					4
Other activities					
3.7. Total hours of individual study (IS) and self-taught activities (ST)				144	
3.8. Total hours per semester				200	
3.9. Number of credits				6	

4. Prerequisites (where applicable)

4.1. curriculum-related	Prior acquisition of basic knowledge in the field of sedimentary geology
4.2. skills-related	Use of microscope and computer

5. Specific conditions (where applicable)

5.1. course-related	Video logistical support; active-participatory methods; examples.
5.2. seminar/laboratory-related	Participation in at least 70% of the practical work is a requirement for taking the exam.

6.1. Competencies resulting from the completion of the degree programme (as referred to in the curriculum)

Professional competencies	
Competency code	Competency
PC1	Applies geological, geochemical and geophysical knowledge in order to characterise and evaluate the energetical resources.
PC2	Uses information tools and other digital instruments for hydrocarbon and mineral resource exploration.
PC3	Performs laboratory analyses and interprets results in order to evaluate the energetic resources.
PC4	Analyses complex problems in the field of energetic resource exploration.
PC5	Writes technical reports and scientific papers within multidisciplinary teams.
Transversal competencies	
Competency code	Competency
TC1	Communicates efficiently technical and scientific information
TC2	Works efficiently in multidisciplinary teams in order to achieve the common objectives

6.2. Learning outcomes relevant to the degree programme

Learning outcomes targeted by the subject		
Competency code	Knowledge and comprehension	Specific academic skills
PC1	1. Understands concepts required to analyse complex problems.	1. Identifies, and analyses complex problems in energetic resource exploration using scientific and digital methods
PC2	2. Knows the structure, rules, and standards for writing technical reports and scientific papers, as well as principles of interdisciplinary collaboration.	2. Writes technical reports and scientific papers within multidisciplinary teams, integrating contributions from different fields.
PC3	3. Knows the principles of teamwork, professional roles, and collaboration dynamics in multidisciplinary teams.	3. Works effectively in multidisciplinary teams, communicating clearly and actively contributing to the achievement of common goals

7. Subject-specific learning outcomes

Knowledge and comprehension
1. The ability to identify significant microfossils and dating various sedimentary deposits.
2. Ability to interpret the indirect information used in biostratigraphy, provided by paleoecology, paleobiogeography, and paleoclimatology.
3. The possibility to evaluate determined associations in a paleoecological context.
4. The possibility to use the data in practical studies on deposits with significance for hydrocarbon exploration.
5. Ability to write reports and scientific papers.
Specific academic skills
1. The student is able to genera and species of microfossils important for dating sedimentary sequences.

2. Able to collect and prepare micropaleontological material from different rocks (shales, carbonates, peat-bogs, etc.) for microscope analysis.

3. The student has the ability to work independently to analyse micropaleontological material using fast analytical methods (e.g., optical microscopy). Thus, the student will be able to identify the main diagnostic features characteristic of different genera/species of biostratigraphically important microfossils.

8. Contents

8.1. Course	Teaching and learning methods	Remarks
Course 1. Small foraminifera. Biozones and applications (Cretaceous).	Presentation, discussions, case studies	
Course 2. Small foraminifera. Biozones and applications (Paleogene).	Presentation, discussions, case studies	
Course 3. Small foraminifera. Biozones and applications (Neogene).	Presentation, discussions, case studies	
Course 4. Cenozoic large benthic foraminifera (Nummulitids and Orthophragminids). Biozones and applications.	Presentation, discussions, case studies	
Course 5. Triassic large benthic foraminifera and calcareous algae. Biozones and applications.	Presentation, discussions, case studies	
Course 6. Jurassic large benthic foraminifera and calcareous algae. Biozones and applications.	Presentation, discussions, case studies	
Course 7. Cretaceous large benthic foraminifera and calcareous algae. Biozones and applications.	Presentation, discussions, case studies	
Course 8. Calcareous nannoplankton. Biozones and applications (Cretaceous).	Presentation, discussions, case studies	
Course 9. Calcareous nannoplankton. Biozones and applications (Cenozoic).	Presentation, discussions, case studies	
Course 10. Applications of palynology in stratigraphy.	Presentation, discussions, case studies	
Course 11. Applications of palynology in hydrocarbon exploration.	Presentation, discussions, case studies	
Course 12. The importance of complex approaches in biostratigraphic analyses.	Presentation, discussions, case studies	
Course 13. Case studies - integration of different proxies in biostratigraphic analyses.	Presentation, discussions, case studies	
Course 14. Case studies - integration of different proxies in biostratigraphic analyses.	Presentation, discussions, case studies	

Bibliography

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- Tyson, R.V., 1995. **Sedimentary Organic Matter: Organic facies and palynofacies**. Chapman and Hall, London.
- Vandenbroucke, M., Largeau, C., 2007. **Kerogen origin, evolution and structure**. *Organic Geochemistry*, 38, 719–833.

* All of these references can be found at the Department of Geology Library (1 M. Kogălniceanu street)

8.2. Seminar/ laboratory	Teaching and learning methods	Remarks
1. Cretaceous small foraminifera biozones. Case studies.	Discussions, case studies, microscope investigations	
2. Paleogene small foraminifera biozones. Case studies.	Discussions, case studies, microscope investigations	
3. Neogene small foraminifera biozones. Case studies.	Discussions, case studies, microscope investigations	
4. Cenozoic LBF. Case studies.	Discussions, case studies, microscopy	
5. Triassic LBF and calcareous algae. Case studies.	Discussions, case studies, microscopy	
6. Jurassic LBF and calcareous algae. Case studies.	Discussions, case studies, microscopy	
7. Cretaceous LBF and calcareous algae. Case studies.	Discussions, case studies, microscopy	
8. Cretaceous calcareous nannoplankton. Case studies.	Discussions, case studies, microscopy	
9. Cenozoic calcareous nannoplankton. Case studies.	Discussions, case studies, microscopy	
10. Applications of palynology in stratigraphy. Case studies.	Discussions, case studies, microscopy	

11. Applications of palynology in hydrocarbon exploration. Case studies.	Discussions, case studies, microscopy	
12. Multi-proxy analyses. Case studies.	Discussions, case studies, microscopy	
13. Multi-proxy analyses. Case studies.	Discussions, case studies, microscopy	
14. Multi-proxy analyses. Case studies.	Discussions, case studies, microscopy	
Bibliography		
The same as those for the course.		

9. Evaluation

Type of activity	9.1 Evaluation criteria	9.2 Evaluation methods	9.3 Percentage in the final grade
9.4. Course	Assessment of knowledge	Written exam	50%
9.5. Seminar/ laboratory	Activity during lab sessions; assessment of knowledge	Practical test (microscopy)	50%
9.6 Minimum standard for passing			
<ul style="list-style-type: none"> • 50% of the subjects required by the written exam: • 50% of the practical test 			

10. SDG labels (Sustainable Development Goals)



Date of entry:
03.04.2026

Signature of course coordinator
Şef. lucr. Dr. George Pleş

Signature of seminar coordinator
Şef. lucr. Dr. George Pleş

Date of approval in the department:
27.04.2026

Signature of the head of department
Conf. dr. Nicolae Har