

## COURSE DESCRIPTION

### *Applications of Micropaleontology in Geosciences*

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. Doctoral School	Theoretical and Applied Geology
1.4. Field of study	Geology
1.5. Level of study	Doctorate

#### 2. Course-related data

2.1. Course title	<b>Applications of Micropaleontology in Geosciences</b>			Course code	<b>SDG06</b>
2.2. Course coordinator	Prof. univ. dr. habil. Ioan Tanțău				
2.3. Seminar coordinator	Prof. univ. dr. habil. Ioan Tanțău				
2.4. Year of study	1	2.5. Semester	II	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	48	of which: 3.5. course	24	3.6. seminar/ laboratory	24
<b>Time allocation for individual study (IS) and self-taught activities (ST)</b>					<b>hours</b>
Learning from textbooks, course materials, bibliography, and notes (IS)					60
Additional research in the library, on subject-specific electronic platforms, and on-site					65
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					51
Tutoring (professional guidance)					10
Examinations					4
Other activities: two-way communication with the course coordinator					12
<b>3.7. Total hours of individual study (IS) and self-taught activities (ST)</b>				202	
<b>3.8. Total hours per semester</b>				250	
<b>3.9. Number of credits</b>				10	

#### 4. Prerequisites (where applicable)

4.1. curriculum-related	Undergraduate courses: Paleobotany and Palynology; Micropaleontology
4.2. skills-related	

#### 5. Specific conditions (where applicable)

5.1. course-related	
5.2. seminar/laboratory-related	

#### 6. Subject-specific learning outcomes

<b>Knowledge</b>
<input checked="" type="checkbox"/> Knows advanced concepts, theories, and models in the field.
<input checked="" type="checkbox"/> Identifies frontier literature in the field.
<input checked="" type="checkbox"/> Knows advanced theoretical and experimental research methods and techniques.

<input type="checkbox"/> Understands scientific methodology applied to the field.
<input type="checkbox"/> Understands statistical methods for data analysis.
<input type="checkbox"/> Knows concepts of critical thinking and logical reasoning.
<input type="checkbox"/> Understands methods for data analysis and interpretation.
<b>Skills</b>
<input type="checkbox"/> Applies knowledge to analyze complex problems.
<input type="checkbox"/> Integrates theoretical and practical concepts to develop innovative solutions.
<input type="checkbox"/> Designs and applies complex methods for problem investigation (sample preparation, taxonomic identification).
<input type="checkbox"/> Uses techniques for processing and interpreting micropaleontological data.
<input type="checkbox"/> Documents and synthesizes relevant scientific information.
<input type="checkbox"/> Produces analytical reports relevant to paleoecological and stratigraphic interpretation.
<input type="checkbox"/> Analyses and interprets complex issues
<b>Responsibility and autonomy</b>
<input type="checkbox"/> Works independently in investigating and expanding knowledge.
<input type="checkbox"/> Assumes responsibility for the accuracy of applied procedures.
<input type="checkbox"/> Makes autonomous decisions regarding the selection and adaptation of methods.
<input type="checkbox"/> Assumes responsibility for procedural correctness.
<input type="checkbox"/> Ensures the accuracy of processed data.
<input type="checkbox"/> Works independently in selecting data processing methodologies.
<input type="checkbox"/> Assumes responsibility for reasoning and decision justification.

## 7. Contents

<b>7.1. Course</b>	<b>Teaching and learning methods</b>	<b>Remarks<sup>1</sup></b>
Introductory course. General aspects, applications, and importance.	Lecture combined with active-participatory methods; discussion	2
Concepts of applied biostratigraphy	Same methods	2
Major microfossil groups used in climate-change reconstruction	Same methods	4
Morphology and structure of microfossils	Same methods	6
Applications of micropaleontology in geosciences: principles, case studies	Same methods	10
Introductory course. General aspects, applications, and importance.	Lecture combined with active-participatory methods; discussion	2
<b>7.2. Seminar/ laboratory</b>	<b>Teaching and learning methods</b>	<b>Remarks</b>
Laboratory methods for processing micropaleontological samples	Practical work	4

<sup>1</sup> For example, organisational aspects, recommendations for students, specific aspects relating to the course/seminar, such as inviting experts in the field, etc.

Microfossil morphology and structure: identification	Microscope study	6
Graphical processing of micropaleontological data using specialized software	Practical work	4
Case studies prepared together with doctoral students, based on individual doctoral research topics	Presentation, case studies, discussions, exercises	10
<p><b>Bibliography</b>          Bibliography for each topic is established according to each PhD student's research theme          Armstrong, H.A. and Brasier, M.D, 2005. Microfossils, 2nd Edn., Blackwell Publishing. Bucur, I, Filipescu, S., 1999 - Micropaleontologia foraminiferelor. Presa Universitara Clujeana , 174 p.          Dragastan, O., Petrescu, I., Olaru, L., 1980. Palinologie. Ed. Didactica si Pedagogica Bucuresti.          Lee, J.J. &amp; Anderson, O.R., 1991 – Biology of Foraminifera. 368 p. Academic Press, London          Petrescu, I., 2003: Palinologia Teri arului. Ed. Carpatica, Cluj-Napoca.          Tantau I., 2006. Histoire de la vegetation tardiglaciaire et holocene dans les Carpates Orientales (Roumanie). Ed. Presa Universitara Clujeana , Cluj-Napoca, 200 p.          Traverse, A. 2008. Paleopalynology, 2nd Edn., Springer.  <a href="https://earthobservatory.nasa.gov/features/Paleoclimatology_Understanding">https://earthobservatory.nasa.gov/features/Paleoclimatology_Understanding</a> -  <a href="http://www.sci.sdsu.edu/plants/plantsystematics/pdfs/Punt_etal2006-PollenPalynology.pdf">http://www.sci.sdsu.edu/plants/plantsystematics/pdfs/Punt_etal2006-PollenPalynology.pdf</a> -  <a href="http://www.colby.edu/info.tech/BI211/">http://www.colby.edu/info.tech/BI211/</a> - <a href="http://g.willcox.pagesperso-orange.fr/archaeobotanical%20images/index1.htm">http://g.willcox.pagesperso-orange.fr/archaeobotanical%20images/index1.htm</a> - <a href="https://climatic.inforef.be/cle_pollen/intro.htm">https://climatic.inforef.be/cle_pollen/intro.htm</a></p>		

## 8. Evaluation

Type of activity	8.1 Evaluation criteria <sup>2</sup>	8.2 Evaluation methods <sup>3</sup>	8.3 Percentage in the final grade
8.4. Course	Knows advanced concepts, theories, and models in the field	Exam	40
	Knows statistical methods for data analysis		30
8.5. Seminar/ laboratory	Designs and applies complex methods for problem investigation (sample preparation, taxonomic identification)	Continuous assessment	10
	Produces analytical reports for paleoecological and stratigraphic interpretation		20
8.6 Minimum standard for passing			
☑ Grade 5 at the exam			
☑ Grade 5 for continuous assessments			

## 9. SDG labels (Sustainable Development Goals)<sup>4</sup>

		Sustainable Development Generic Label
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<sup>2</sup> The evaluation criteria must directly reflect the learning outcomes targeted at the level of the degree programme respectively at the level of the subject. More specifically, the learning outcomes set out in the expected learning outcomes are assessed.

<sup>3</sup> Both final evaluation methods and ongoing evaluation strategies should be established.

<sup>4</sup> Select a single label which, according to the [Implementation of SDG labels in the academic process](#), best matches the subject. If the subject addresses sustainable development in a generic manner (i.e. by presenting/introducing the general framework of sustainable development, etc.), then the Sustainable Development generic label may be applied. If none of the labels describe the subject, select the last option: "No label applies."

								
								
								No label applies
								

Date of entry:

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Signature of course coordinator

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Signature of seminar coordinator

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Date of approval by the doctoral school council:

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Signature of the doctoral school director

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