

## COURSE SYLLABUS

### 1. Data about the program

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 Study cycle	Doctorate
1.6 Study program / Qualification	Doctoral training / PhD in Geology

### 2. Course data

2.1 Name of discipline	<b>New trends in geological-paleontological sciences</b>						
2.2 Teacher responsible for lectures	<b>Prof. dr. Ioan Bucur</b>						
2.3 Teacher responsible for seminars	<b>Prof. dr. Ioan Bucur</b>						
2.4 Year of study	I	2.5 Semester	II	2.6. Type of evaluation	E	2.7 Course framework	Op.

### 3. Estimated total time of teaching activities (hours per semester)

3.1 Hours per week	4	Out of which: 3.2 Lectures	2	3.3 Seminars / Laboratory classes	2
3.4 Total hours in the curriculum	48	Out of which: 3.5 Lectures	24	3.6 Seminars / Laboratory classes	24
Allocation of study time:					
Study supported by textbooks, other course materials, recommended bibliography and personal student notes					30
Additional learning activities in the library, on specialized online platforms and in the field					20
Preparation of seminars / laboratory classes, topics, papers, portfolios and essays					30
Tutoring					20
Examinations					-
Other activities: -					-
3.7 Individual study (total hours)	100				
3.8 Total hours per semester	156				
3.9 Number of credits	20				

### 4. Preconditions (where applicable)

4.1 Curriculum	<ul style="list-style-type: none"> <li>• Previous acquisition of basic knowledge in the field of geology</li> </ul>
4.2 Competences	<ul style="list-style-type: none"> <li>•</li> </ul>

### 5. Conditions (where applicable)

5.1 Conducting lectures	<ul style="list-style-type: none"> <li>•</li> </ul>
5.2 Conducting seminars / laboratory classes	<ul style="list-style-type: none"> <li>• Attendance at seminars is mandatory</li> </ul>

### 6. Specific competences acquired

<b>Professional competences</b>	<ul style="list-style-type: none"> <li>• C1 Understanding the mechanisms of development and evolution of carbonate sedimentation.</li> <li>• C2 Possibility to understand the successions of carbonate rocks in stratigraphic and structural context.</li> <li>• C3 Possibility of using data in practical studies on deposits of economic importance.</li> </ul>
<b>Transversal competences</b>	<ul style="list-style-type: none"> <li>• CT1 Integration of knowledge in all those acquired through other disciplines of the doctoral program (e.g. geochronology, isotopic geology, geochemical processes in mineralogy and paleontology),</li> <li>• CT2 Study skills in complex research teams.</li> <li>• CT3 Teamwork skills.</li> </ul>

## 7. Course objectives (based on the acquired competencies grid)

7.1 The general objective of the course	<ul style="list-style-type: none"> <li>• The thoroughgoing study by the doctoral students of the problematic related to the environments of carbonate sedimentation: stratigraphic context and specific characteristics.</li> </ul>
7.2 Specific objectives	<ul style="list-style-type: none"> <li>• Acquisition of skills in identifying and characterizing carbonate rock bodies of economic importance</li> </ul>

## 8. Content

8.1 Lectures	Teaching methods	Comments
1. From micropaleontological associations to the paleoecology of the carbonate shelf	Combined lecture with active-participatory methods; examples	4 hours
2. The role of biostratigraphy in deciphering the evolution of carbonate sedimentation domains	Combined lecture with active-participatory methods; examples	4 hours
3. Carbonate platforms: Types, genesis, evolution	Combined lecture with active-participatory methods; examples	4 hours
4. Cycles in shallow water carbonate sediments	Combined lecture with active-participatory methods; examples	4 hours
5. Sequence stratigraphy of carbonate shelf deposits: peculiarities	Combined lecture with active-participatory methods; examples	4 hours
6. New trends in the study of the diagenesis of carbonate rocks	Combined lecture with active-participatory methods; examples	4 hours

7. Geology of Mesozoic carbonate deposits in the Tethysian area: new acquisitions and examples from Romania	Combined lecture with active-participatory methods; examples	4 hours
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#### Bibliography

AHR M.W. (2008) – Geology of carbonate reservoirs: The identification, description and characterization of hydrocarbon reservoirs in carbonate rocks, 277 p., Willey & Sons, New Jersey

BATHURST, R.G.C. (1975) – Carbonate sediments and their diagenesis. Dev. Sedimentol., 12, 620 p., 359 figs., Elsevier, Amsterdam

FLÜGEL E. - Microfacies of carbonate rocks. 976 p., 151 pl., 326 fig., Springer, Berlin Heidelberg New York.

MOORE C.H. & WADE W.,J. (2013) – Carbonate reservoirs: porosity and diagenesis in a sequence stratigraphic framework (sec. ed.). 374 p., Development in Sedimentology 67, Elsevier, Amsterdam.

SCHLAGER W. (2005) – Carbonate sedimentology and sequence stratigraphy, SEPM concepts in sedimentology and paleontology 8, 200 p., Boulder, Colorado.

SCHOLLE P.A., BEBOUT D.G. & MOORE C.H. (1998) – Carbonate depositional environments, AAPG Memoir 33, 708 p., Tulsa, Oklahoma.

SELLEY R.C. & SONNENBERG S.A. (2015) – Elements of Petroleum Geology (3<sup>rd</sup> ed), 507 p., Academic Press, Elsevier, Amsterdam

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8.2 Seminars / laboratory classes	Teaching methods	Comments
1. Microfossiliferous associations from the limestones of the Romanian Carpathians	Presentation, followed by debate; additional examples	4 hours
2. Biozonation of carbonate sequences in some Carpathian areas	Presentation, followed by debate; additional examples	4 hours
3. The Getic carbonate Platform	Presentation, followed by debate; additional examples	4 hours
4. Applying of sequential stratigraphy criteria to carbonate deposits in Romania: case studies	Presentation, followed by debate; additional examples	4 hours
5. Diagenesis of some carbonate rocks from the Carpathian area: case studies	Presentation, followed by debate; additional examples	4 hours
6. Diagenetic aspects and distribution of porous spaces on an external platform-shelf transect: case study	Presentation, followed by debate; additional examples	4 hours
7. Carbonate rocks in geotectonic framework: case studies	Presentation, followed by debate; additional examples	4 hours

#### Bibliography:

Papers from the journals: AAPG Bulletin, Facies, Geoarabia, Journal of Petroleum Geology, Sedimentology,

**9. Aligning the contents of the discipline with the expectations of the epistemic community representatives, professional associations and standard employers operating in the program field**

- The content of the discipline is in accordance with that of similar disciplines that are done in other university centers in the country and abroad.
- Many PhD students who have obtained the doctorate following the course that includes this program have been successfully employed in the hydrocarbon field research and exploration industry (e.g. Petrom, OMV). They have been very well appreciated and currently hold important positions in those companies

**10. Examination**

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Weight in the final grade
10.4 Lectures	Assessment of knowledge	Ongoing tests	50%
10.5 Seminars / laboratory classes	Activity during seminars	Discussions, answers to questions	50%
10.6 Minimum performance standard			
<ul style="list-style-type: none"> <li>• Knowledge of at least 50% of the theoretical and practical information</li> </ul>			

Date of issue

18.09.2021

Signature of the teacher responsible for lectures

Signature of the teacher responsible for seminars

Prof. dr. Ioan Bucur

Date of approval by the doctoral school council

Signature of the doctoral school director