COURSE DESCRIPTION

Introduction to petroleum systems

Academic year 2026-2027

1. Programme-related data

1.1. Higher Education Institution	Universitatea Babeş-Bolyai din Cluj Napoca
1.2. Faculty	Faculty of Biology and Geology
1.3. Department	Department of Geology
1.4. Field	Geology
1.5. Level of study	Masters
1.6. Degree programme / Qualification	Subsurface Energy Resources / Geologist
1.7. Form of education	Învăţământ cu frecvenţă

2. Course-related data

2.1. Course title	**Introduction to petroleum systems**			Course code	**BME1111**
2.2. Course coordinator	Şef Lucrări dr. Cristian Victor Mircescu				
2.3. Seminar coordinator	Şef Lucrări dr. Cristian Victor Mircescu				
2.4. Year of study	1	2.5. Semester	1	2.6. Type of assessment	Exam
2.7. Course status	Compulsory			2.8. Course type	Core 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	154	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)					45
Additional research in the library, on subject-specific electronic platforms, and on-site					30
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					15
Tutoring (professional guidance)					6
Examinations					2
Other activities					-
3.7. Total hours of individual study (IS) and self-taught activities (ST)				**98**	
3.8. Total hours per semester				**154**	
3.9. Number of credits				**6**	

4. Prerequisites (where applicable)

4.1. curriculum-related	Fundamentals in structural and sedimentary geology
4.2 skills-related	Use of microscope and computer

5. Specific conditions (where applicable)

5.1. course-related	Face to face and online activities
5.2. seminar/laboratory-related	Face to face and online activities

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 knwoledge in order to characterise and evaluate the energetical 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**
TC2	Works efficiently in multidisciplinary teams in order to achieve the common objectives
TC3	Continuously improves and constantly acquires new working methods in the field of energy resources

6.2. Learning outcomes relevant to the degree programme (as referred to in the curriculum)

Learning outcomes targeted by the subject		
Competency code	**Knowledge and comprehension**	**Specific academic skills**
PC1	Understands geological, geochemical, and geophysical concepts and methods used for energy resource assessment.	Applies geological, geochemical, and geophysical methods and techniques to characterize and evaluate energy resources.
PC4	Knows the principles of information systems and digital tools applied in hydrocarbon and mineral resource exploration.	Uses specialized software and digital tools for analysing geological and geophysical data.
TC1	Knows the principles and techniques of scientific and technical communication, including report writing and results presentation.	Works responsibly in the laboratory, following safety protocols and ethical standards in handling samples and interpreting data.

7. Subject-specific learning outcomes

Knowledge and comprehension
The student knows: how to analyse petroleum system development
The student is able to identify the key elements of petroleum systems and the relationship between them
Specific academic skills
The student has the ability to work independently in order to obtain a general image on the evolution of petroleum systems

8. Contents

8.1. Course	**Teaching and learning methods**	**Remarks**
1.Introduction to Petroleum Systems	Presentation, discussions, case studies	-
2-3. Source rocks	Presentation, discussions, case studies	-
4-5. Migration, charge	Presentation, discussions, case studies	-
6-7. Seal	Presentation, discussions, case studies	-
8-9. Trapping	Presentation, discussions, case studies	-
10-11. Reservoir	Presentation, discussions, case studies	-

12-13. Timing – Petroleum System Elements Analysis	Presentation, discussions, case studies	-
14. Examples from around the world	Presentation, discussions, case studies	-
Bibliography The Petroleum System—From Source to Trap: Leslie B. Magoon, Wallace G. Dow; Publisher: AAPG, 1994. Petroleum and Basin Evolution: Dietrich H. Welte; Brian Horsfield; Donald R. Baker, Springer 2011.		
8.2. Seminar/ laboratory	**Teaching and learning methods**	**Remarks**
1-13. Examples of petroleum systems and relation between key elements of petroleum systems	Presentation, case studies, discussions, exercises	-
Practical tests	Presentation, case studies, discussions, exercises	-
Bibliography The Petroleum System—From Source to Trap: Leslie B. Magoon, Wallace G. Dow; Publisher: AAPG, 1994. Petroleum and Basin Evolution: Dietrich H. Welte; Brian Horsfield; Donald R. Baker, Springer 2011.		

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 examination	50%
9.5. Seminar/ laboratory	Assessment of knowledge	Practical tests	50%
9.6 Minimum standard for passing			
• 50% of the subjects required by the written exam • 50% of the practical test			

10. SDG labels (Sustainable Development Goals)

	○ Sustainable Development Generic Label							
1 FĂRĂ SĂRĂCIE	2 FOAMETE „ZERO"	3 SĂNĂTATE ȘI BUNĂSTARE	4 EDUCAȚIE DE CALITATE	5 EGALITATE DE GEN	6 APĂ CURATĂ ȘI SANITAȚIE	7 ENERGIE CURATĂ ȘI LA PREȚURI ACCESIBILE	8 MUNCĂ DECENTĂ ȘI CREȘTERE ECONOMICĂ	9 INDUSTRIE, INOVAȚIE ȘI INFRASTRUCTURĂ
○	○	○	○	○	○	○	○	○
10 INEGALITĂȚI REDUSE	11 ORAȘE ȘI COMUNITĂȚI DURABILE	12 CONSUM ȘI PRODUCȚIE RESPONSABILE	13 ACȚIUNE CLIMATICĂ	14 VIAȚA ACVATICĂ	15 VIAȚA TERESTRĂ	16 PACE, JUSTIȚIE ȘI INSTITUȚII EFICIENTE	17 PARTENERIATE PENTRU REALIZAREA OBIECTIVELOR	No label applies
○	○	○	○	○	X ○	○	○	○

Date of entry:
21.04.2026

Signature of course coordinator

.....

Signature of seminar coordinator

.....

Date of approval in the department:
21.04.2026

Signature of the head of department

.....