



Module name: Facies analysis

Academic year: 2015/2016 Code: BGG-1-636-s ECTS credits: 3

Faculty of: Geology, Geophysics and Environmental Protection

Field of study: Mining and Geology Specialty: —

Study level: First-cycle studies Form and type of study: Full-time studies

Lecture language: English Profile of education: Academic (A) Semester: 6

Course homepage: —

Responsible teacher: prof. dr hab. Porębski Szczepan (spor@agh.edu.pl)

Academic teachers: prof. dr hab. Porębski Szczepan (spor@agh.edu.pl)

Description of learning outcomes for module

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Connections with FLO	Method of learning outcomes verification (form of completion)
Social competence			
M_K001	Student is able to erect descriptive and genetic facies framework as an entry data for allostratigraphic and sequences stratigraphic interpretations.	GG1A_K01, GG1A_K08	Test
M_K002	Student is able to co-operate within a group of specialists representing different disciplines of Earth Sciences.	GG1A_K01, GG1A_K08	Presentation
Skills			
M_U001	Student is capable to apply a proper methodology to core, outcrop and well log data in order to recognize lithofacies, facies, facies associations, facies successions and unconformities, and to collectively interpret them in terms of depositional system shifts in time and space.	GG1A_U11, GG1A_U03, GG1A_U05	Test
M_U002	Student is capable to analyze vertical facies successions in in order to make justified facies predictions, in particular of reservoir and seal facies, in frontier areas.	GG1A_U11, GG1A_U09	Test
Knowledge			

M_W001	Student knows the range of processes and products of deposition in moderns sedimentary environments.	GG1A_W04	Test
M_W002	Student knows the range of diagnostic features allowing for the distinction of depositional systems in the ancient record.	GG1A_W05, GG1A_W06	Test

FLO matrix in relation to forms of classes

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Form of classes										
		Lectures	Auditorium classes	Laboratory classes	Project classes	Conversation seminar	Seminar classes	Practical classes	Fieldwork classes	Workshops	Others	E-learning
Social competence												
M_K001	Student is able to erect descriptive and genetic facies framework as an entry data for allostratigraphic and sequences stratigraphic interpretations.	+	-	-	-	-	-	-	-	-	-	-
M_K002	Student is able to co-operate within a group of specialists representing different disciplines of Earth Sciences.	-	-	-	-	-	+	-	-	-	-	-
Skills												
M_U001	Student is capable to apply a proper methodology to core, outcrop and well log data in order to recognize lithofacies, facies, facies associations, facies successions and unconformities, and to collectively interpret them in terms of depositional system shifts in time and space.	+	-	-	-	-	-	-	-	-	-	-
M_U002	Student is capable to analyze vertical facies successions in in order to make justified facies predictions, in particular of reservoir and seal facies, in frontier areas.	+	-	-	-	-	-	-	-	-	-	-
Knowledge												
M_W001	Student knows the range of processes and products of deposition in moderns sedimentary environments.	+	-	-	-	-	-	-	-	-	-	-

M_W002	Student knows the range of diagnostic features allowing for the distinction of depositional systems in the ancient record.	-	-	-	-	-	+	-	-	-	-	-
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Module content

Lectures

- Outline of methodology and aims of facies analysis, in particular in exploration for fossil fuels. Facies analysis as a basic tool for creating input data for larger-scale stratigraphic interpretations (3 h)
- Basic definitions: lithofacies and facies associations in classical and modern usages. Standard and local facies models; methods of facies breakdown (3 h).
- Walther Law, range of applicability. Role of unconformities in facies successions. Types of unconformities, criteria of recognition in geological and seismic record (3 h).
- Diachronism, facies gradient, depositional dip and strike. Accommodation space and relative base level, their role in creating facies successions and facies shifts (3 h).
- Transgression, regression, major controls on facies belt migration. Allo- and autogenic facies shifts (3 h).
- Parasequence, parasequence set, vertical and lateral accretion, main types of stratigraphic facies successions (3 h).
- Modern depositional systems (aeolian, lacustrine, alluvial fan, fluvial, deltaic, shelf, slope and deep-basin, carbonate-platform systems); criteria for recognition in the ancient record (9 h).
- Role of facies analysis in exploration for oil and gas resources (3 h).

Seminar classes

Based upon literature data, each student will deliver a 15-minute presentation outlining the facies model and criteria of recognition of a particular depositional system, or a part of such system.

Method of calculating the final grade

Średnia ocena z kolokwium obejmującego zakres wykładów oraz z zaliczenia seminarium.

Prerequisites and additional requirements

Znajomość podstaw stratygrafii i sedymentologii.

Recommended literature and teaching resources

- Gradziński R., Kostecka A., Radomski, A., Unrug R., 1986. Zarys sedymentologii. Wyd. Geol. Warszawa. 614 pp.
- Reading, H.G., (Ed.), 1996. Sedimentary Environments: Processes, Facies and Stratigraphy. Blackwell, Oxford, p. 154-231.

Scientific publications of module course instructors related to the topic of the module

Additional scientific publications not specified

Additional information

None

Student workload (ECTS credits balance)

Student activity form	Student workload
Participation in lectures	30 h
Participation in seminar classes	15 h
Realization of independently performed tasks	23 h
Preparation for classes	20 h
Examination or Final test	2 h
Summary student workload	90 h
Module ECTS credits	3 ECTS