

SYLLABUS

1. Course title: **Processes and products – introduction to sedimentary geology**
2. Course lecturer: **dr Mariusz Paszkowski**
3. Field, type and level of studies, year of study: **geology, full-time doctoral studies, all years of study**
4. Course character: **elective-compulsory lecture** (see point A.1.2 in the *Curriculum of the full-time Doctoral Programme* – at least 4 ECTS points have to be gained during the studies)
5. Teaching method: **traditional** (personal contact with the lecturer)
6. Language: **Polish or English** (depending on the audience)
7. Course type and number of hours: **lecture (12 h), seminar (3 h)**
8. Estimated amount of student's independent work: **10 h**
9. Total workload and number of ECTS points: **25 h, 1 ECTS**

10. Short description and main focus of the course:

The aim of the lectures is to familiarize PhD students with the current state of sedimentary rock geology and prospects for its development. In the first part, a critical analysis of concepts such as sedimentary rock and sedimentary processes will be carried out. It will cover the basics, propedeutics of stratigraphy, sedimentology and its research tools: observation methodology at various scales, in the field, in the core room and under the microscope, in the laboratory. The principles of sampling, preparation, criteria for identification and classification of sedimentary rocks, principles of facies science, distinguishing facies associations, analysis of architecture and fillings of basins and sedimentary records will be discussed. Observation material and results of instrumental analyzes as the basis for constructing contemporary models and reconstruction of past processes and depositional environments, as well as the methodology of provenance studies. The classic approach, including canons, stereotypes and recognized paradigms (e.g. lithostratigraphy principles, superposition principle or actualism principle) will be confronted with numerous exceptions recognized from them and with newer paradigms (e.g. sequence stratigraphy or chemostratigraphy), as well as heterodoxic, unconventional models and theories, both scientific and pseudoscientific (e.g. creationist). The basis of the lecture methodology will be case studies and seminar discussions. Spectacular cases of sedimentology challenges related to the recognition of known or newly discovered, mysterious, controversial sedimentary systems based on own research and literature will be discussed. A review of the history of disputes around them, alternative interpretations and their subsequent revisions, will illustrate the open, holistic nature, complexity and development potential of this natural science.

11. References:

Miall, A. D., 2015, Updating uniformitarianism: stratigraphy as just a set of “frozen accidents”, in Smith, D. G., Bailey, R., J., Burgess, P., and Fraser, A., eds., *Strata and time*: Geological Society, London, Special Publication 404, p. 11-36.

Miall, A. D., 2010, The geology of stratigraphic sequences, second edition: Springer-Verlag, Berlin, 522 p.

Miall, A. D., 2016, Stratigraphy: A modern synthesis: Springer-Verlag, Berlin, 454 p.

Miall, A. D., and Miall, C. E., 2001, Sequence stratigraphy as a scientific enterprise: the evolution and persistence of conflicting paradigms: Earth Science Reviews, v. 54, #4, p. 321-348.

Prothero; D,R, & F L Schwab 2014. Sedimentary geology : an introduction to sedimentary rocks and stratigraphy New York : W.H. Freeman and Company.

12. Educational outcomes:

KNOWLEDGE: The student knows the basic concepts and methods of sedimentology necessary for the reconstruction of processes and depositional environments.

PRACTICAL SKILLS: The student is able to identify the basic types of sedimentary rocks, recognize their texture, features and diagnostic sedimentary structures for individual depositional environments and prepare a basic description of the sedimentary sequence

SOCIAL SKILLS: By learning about the spectrum of research methods and making them aware of their limitations, as well as developing criticism of the current canons and paradigms of sedimentary geology, students can still independently and critically continue literature studies and properly understand the complexity of the natural context of many, not only geological activities, which will be undertaken in future professional life.

13. Evaluation of the educational outcomes: **written exam, observation of student's commitment during the classes, presentation on the seminar**

14. Criteria to complete the course: at least **80%** attendance, final grade depends on the exam results, evaluation of the student's commitment during the classes and presentation on the seminar.