

**Clastic Sedimentology**  
- COURSE SYLLABUS



1.	<b>Course title:</b> <i>Clastic Sedimentology</i>
2.	<b>Lecturer:</b> <i>Aleksander Kowalski, PhD</i>
3.	<b>Field, type and level of studies, year of study:</b> <i>Sedimentology, physical geology, full-time doctoral studies</i>
4.	<b>Course character:</b> <i>monographic lecture</i>
5.	<b>Teaching method:.</b> <i>on-line</i>
6.	<b>Language:</b> <i>English, Polish, depending on the audience</i>
7.	<b>Course type and number of hours:</b> <b>Practical workshop, up to 8 hours.</b> <i>lectures 30h</i>
8.	<b>Estimated load of student's independent work:</b> <i>30 h</i>
9.	<b>Total workload and number of ECTS points:</b> <i>60 h, 2 ECTS</i>
10.	<p><b>Short description and main focus of the course:</b></p> <p><i>Sedimentology as the branch of a widely understood geological sciences deals with the formation, transport and deposition of clastic and non-clastic materials. These materials are main constituents of sedimentary rocks which provide a record of ancient environments and life. Sediments cover most of the Earth surface and most of the world's groundwater and energy are trapped in sedimentary rocks. Main goal of this course is to provide basic knowledge about sediment transport processes and origin of clastic sedimentary rocks.</i></p> <p><i>Topics of our lectures will include:</i></p> <ul style="list-style-type: none"> <li><i>– sediment movement by fluid flow and sediment transport processes including transport,</i></li> <li><i>– basic concepts of fluid mechanics,</i></li> <li><i>– classification of sediments and sedimentary rocks (sedimentary rock types),</i></li> <li><i>– textures of terrigenous clastic sedimentary rocks (properties of sedimentary particles),</i></li> <li><i>– basic terminology for sedimentary structures,</i></li> <li><i>– erosional, depositional and deformational structures in terrigenous clastic sedimentary rocks,</i></li> <li><i>– concepts of depositional environment and sedimentary facies,</i></li> </ul>

	<ul style="list-style-type: none"> <li>– marine and nonmarine sedimentary environments and their products in rock record,</li> <li>– facies models and palaeocurrent analysis,</li> <li>– field sedimentology: sedimentary logs, description of outcrop sections, core observations.</li> </ul>	
<b>11.</b>	<b>References:</b> <ol style="list-style-type: none"> <li>1. Nichols, G., 2009. <i>Sedimentology and Stratigraphy</i>. Wiley-Blackwell, 419 pp.</li> <li>2. Tucker, M. E., 2003. <i>Sedimentary Rocks in the Field</i>. 4rd Edition, John Wiley &amp; Sons Ltd., 234 pp.</li> <li>3. Friedman G. M., Sanders F. E, 1978. <i>Principles of Sedimentology</i>, Wiley, New York, 792 pp.</li> <li>4. Blatt H., Middleton G., Murray R. 1972. <i>Origin of Sedimentary Rocks</i>. Prentice-Hall, Inc., 634 pp.</li> <li>5. Selley, R. C., 1992. <i>Applied Sedimentology</i>. Academic Press, 446 pp.</li> <li>6. Reineck H. E., Singh I. B., 1973. <i>Depositional Sedimentary Environments With Reference to Terrigenous Clastics</i>. Springer-Verlag, Berlin Heidelberg New York, 439 pp.</li> <li>7. Collinson J., Mounthey N., 2019. <i>Sedimentary structures</i>. 4th Edition. Dunedin, 352 pp.</li> <li>8. Pettijohn F. J., Potter, P. E., 1964. <i>Atlas and Glossary of Primary Sedimentary Structures</i>. Springer, 370 pp.</li> <li>9. Miall A. D., 1996. <i>The Geology of Fluvial Deposits</i>. Springer, 582 pp.</li> <li>10. Allen J. R., Allen P. A., 2013. <i>Basin Analysis: Principles and Application to Petroleum Play Assessment</i>. 3rd Edition, Wiley-Blackwell, 640 pp.</li> </ol>	
<b>12.</b>	<b>Prerequisites:</b> <i>Knowledge of basic geology, principles of stratigraphy and sedimentology at intermediate level</i>	
<b>13.</b>	<b>Educational outcomes:</b> <p><b>Knowledge:</b> Students are able to understand the most important sedimentary processes and origin of sedimentary structures. Students also know basic principles of sediment transport and deposition.</p> <hr/> <p><b>Practical Skills:</b> Students are able to distinguish basic facies types in rock record and know how to conduct field studies of sedimentary rocks. They also know the basic concepts of interpreting rocks in terms of physical processes. Students can perform sedimentary logs and core observations. Students will be able to read and understand scientific papers on clastic sedimentology.</p> <hr/> <p><b>Social Skills:</b> Students are able to understand the applied importance of studying sedimentology and discuss important research topics with experts and colleagues. Students can critically evaluate arguments presented in papers and scientific discussions.</p>	<b>PQF level 8 codes:</b> P8S_WG P8S_UK P8S_KK
<b>14.</b>	<b>Evaluation of the educational outcomes:</b>	

	<ul style="list-style-type: none"> <li>– 1 oral (on-line) presentation about a selected issue related with clastic sedimentology (e.g. specific sedimentary (sub)environments and their products in rock record etc.)</li> <li>– 1 take home exam</li> </ul>
<b>15.</b>	<p><b>Criteria to complete the course:.</b></p> <ul style="list-style-type: none"> <li>– at least 70% of course attendance,</li> <li>– 1 oral (on-line) presentation about a selected issue related with clastic sedimentology</li> <li>– 1 take home exam which will include basic knowledge of sedimentary processes, structures and facies models.</li> </ul>
<b>16.</b>	<p><b>Contact with the lecturer:</b></p> <p>via e-mail: <a href="mailto:aleksander.kowalski@pgi.gov.pl">aleksander.kowalski@pgi.gov.pl</a> (no major time restrictions), meetings on-line via Teams</p>