

1.	Nazwa przedmiotu/modułu w języku angielskim Trace fossils and their palaeoenvironmental significance	
2.	Nazwa przedmiotu/modułu w języku polskim Skamieniałości śladowe i ich znaczenie dla rekonstrukcji paleośrodowisk	
3.	Jednostka prowadząca przedmiot WNZKŚ, Instytut Nauk Geologicznych, Zakład Geologii Stratygraficznej	
4.	Kod przedmiotu/modułu USOS	
5.	Rodzaj przedmiotu/modułu Fakultatywny otwartego wyboru	
6.	Kierunek studiów Geologia	
7.	Poziom studiów II stopień	
8.	Rok studiów I lub II rok	
9.	Semestr zimowy lub letni	
10.	Forma zajęć i liczba godzin Wykłady: 26 godz.	
11.	Imię, nazwisko, tytuł/stopień naukowy osoby prowadzącej zajęcia Wykładowca (lecturer): dr Alina Chrząstek Koordinator: dr Alina Chrząstek	
12.	Wymagania wstępne w zakresie wiedzy, umiejętności i kompetencji społecznych dla przedmiotu/modułu oraz zrealizowanych przedmiotów Main knowledge concerning geology	
13.	Cele przedmiotu The aim of the lecture is presentation of the main ichnofacies and common trace fossils and their usefulness to reconstruction of the sedimentary conditions and palaeoenvironments.	
14.	Zakładane efekty kształcenia (W_1) Students have knowledge concerning trace fossils. They received also some informations connecting with historical geology and sedimentology. (W_2) Students know the modern methods of ichnological analysis and are able to	Symbole kierunkowych efektów kształcenia K2_W01; K2_W08 K2_W03

	<p>recognize the common trace fossils. They can use the trace fossils for reconstructions of continental, shallow- and deep-marine environments.</p> <p>(W_3) They are able to interpret the sedimentary environment on the basis of trace fossils</p> <p>(W_4) They have knowledge concerning geology of Poland (examples of the ichnological analysis from the Sudety Mountains)</p> <p>(W_5) Students know English ichnological terminology</p> <p>(U_1) Students use the modern ichnological models and ichnological literature (in Polish and English) in aim to reconstruct the palaeoenvironment</p> <p>(U_2) They can choose correct informations that allow to recognize the trace fossils and establish sedimentary conditions.</p> <p>(K_1) Students understand the need of systematic study. Due to continuous development of science (ichnology), they understand the necessity to expand their knowledge.</p> <p>(K_2) Students are able to establish the sequence of research concerning trace fossil assemblages, in aim to reconstruct the palaeoenvironment.</p> <p>(K_3) Students learn to use ichnological literature (always the newest one) to reconstruct the sedimentary conditions.</p>	<p>K2_W04</p> <p>K2_W07</p> <p>K2_W09</p> <p>K2_U01; K2_U02</p> <p>K2_U03</p> <p>K2_K01</p> <p>K2_K03</p> <p>K2_K06</p>
15.	<p>Treści programowe</p> <p>Wykłady:</p> <p>Definition of the trace fossils. Ethological division of the trace fossils into different categories. Main tracemakers of the trace fossils.</p> <p>The historical background of ichnology.</p> <p>Characteristic of the main Seilacherian ichnofacies (continental, shallow-marine and deep-marine). Ichnodiversity of the trace fossils in various ichnofacies.</p> <p>Description of the common ichnotaxa. Informations concerning trace makers of the burrows and their paleoenvironmental requirements.</p> <p>Usefulness of the trace fossils to the palaeoenvironmental reconstructions (bathymetry, energy of water, oxygenation level and salinity, sedimentary rate, character of the substrate).</p> <p>Ichnological analysis. Examples of ichnological analysis from different regions from Poland (Sudety Mountains) and Europe or other countries.</p> <p>Vertebrate traces. The most interesting discoveries of vertebrate traces.</p>	

	<p>Colonization of the continental, brackish, shallow-marine and deep-marine environments by producers of the trace fossils. Phanerozoic history of the trace fossils, changes ichnotaxonomical diversity in time.</p> <p>The application of the invertebrate and vertebrate trace fossils to biostratigraphy – ichnostratigraphy. Definition of the systems boundaries (Neoproterozoic-Cambrian boundary).</p> <p>Changes in the trace fossil assemblages during 5 Mass-Extinction episodes (Latest Ordovician, Late Devonian, End-Permian, End-Triassic, End-Cretaceous Mass Extinctions)</p>
16.	<p>Zalecana literatura (podręczniki)</p> <p>Literatura podstawowa (main literature):</p> <p>Bromley, R.G. 1996. Trace Fossils. Biology, Taphonomy and Applications, 1–347. Chapman and Hall; London.</p> <p>Bromley, R.G., Buatois, L.A., Mángano, G., Genise, J.F. and Melchor, R.N. 2007. Sediment-Organism Interactions: A Multifaceted Ichnology. SEPM, Special Publication, 88, 393 pp.</p> <p>Buatois, L. and Mángano, M.G. 2011. Ichnology, Organism-Substrate Interactions in Space and Time. Cambridge University Press, 358 pp.</p> <p>Frey, R.W. and Seilacher, A. 1980. Uniformity in marine invertebrate ichnology. <i>Lethaia</i>, 13, 183–207.</p> <p>Frey, R.W., Pemberton, S.G. and Saunders, T.D.A. 1990. Ichnofacies and bathymetry; a passive relationship. <i>Journal of Paleontology</i>, 64, 155–158.</p> <p>Knaust, D. and Bromley, R.G. 2012. Trace fossils as indicators of sedimentary environments, <i>Developments in Sedimentology</i>, 64, 924 pp.</p> <p>McIlroy, D. 2004. The application of ichnology to palaeoenvironmental and stratigraphic analysis. <i>Geological Society, Special Publication</i>, 228, 490 pp.</p> <p>Pemberton, S.G., Spila, M., Pulham, A.J., Saunders, T., MacEachern, J.A., Robbins, D. and Sinclair, I.K. 2001. Ichnology and sedimentology of shallow to marginal marine systems. Ben Nevis & Avalon Reservoirs, Jeanne d’Arc Basin. <i>Geological Association of Canada, Short Course Notes</i>, 15, 343 pp.</p> <p>Seilacher, A., 2007. Trace fossil analysis, 1–226. Springer-Verlag, Berlin-Heilderberg-New York.</p> <p>Literatura uzupełniająca (supplementary literature):</p> <p>Curran, H.A. 1985. Biogenic structures: their use in interpreting depositional environments. <i>SEPM, Special Publications</i>, 35, 347 pp.</p> <p>Frey, R.W., Howard, J.D. and Pryor, W.A. 1978. Ophiomorpha: its morphologic, taxonomic, and environmental significance. <i>Palaeogeography, Palaeoclimatology, Palaeoecology</i>, 23, 199–229.</p> <p>Miller, W., III 2007. Trace fossils. Concepts. Problems. Prospects. Elsevier, 611 pp.</p> <p>Miller, M.F., Ekdale, A.A. and Picard, M.D. 1984. Trace fossils and paleoenvironments: marine carbonate, marginal marine terrigenous and continental terrigenous settings. <i>Journal of Paleontology</i>, 58 (2), 598 pp.</p>
17.	<p>Forma zaliczenia poszczególnych komponentów przedmiotu/modułu, sposób sprawdzenia osiągnięcia zamierzonych efektów kształcenia:</p> <p>Wykłady (lectures): final test (above 50% of all points)</p>

18.	Język wykładowy English	
19.	Obciążenie pracą studenta:	
	Forma aktywności studenta	Średnia liczba godzin na zrealizowanie aktywności
	Godziny zajęć (wg planu studiów) z nauczycielem: - wykład: 26	26
	Praca własna studenta np.: - przygotowanie do zajęć: - opracowanie wyników: - czytanie wskazanej literatury: 10 - napisanie raportu z zajęć: - - przygotowanie do egzaminu: 15	25
	Suma godzin	51
	Liczba punktów ECTS	2 ECTS