


**KAPITAŁ LUDZKI**  
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez  
 Unię Europejską w ramach  
 Europejskiego Funduszu  
 Społecznego

**UNIA EUROPEJSKA**  
 EUROPEJSKI  
 FUNDUSZ SPOŁECZNY


<b>Course title</b>		<b>ECTS code</b>	
Life in amber		not defined	
<b>Name of unit administrating study</b>			
Faculty of Biology			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	first tier studies (BA), second tier studies (MA)
Faculty of Biology	Medical Biology	<b>form</b>	full-time
		<b>specialty</b>	all
		<b>specialization</b>	all
Faculty of Biology	Biology	<b>type</b>	first tier studies (BA), second tier studies (MA)
		<b>form</b>	full-time
		<b>specialty</b>	all
Faculty of Biology	Genetics and Experimental Biology	<b>specialization</b>	all
		<b>type</b>	first tier studies (BA)
		<b>form</b>	full-time
Faculty of Biology	Genetics and Experimental Biology	<b>specialty</b>	all
		<b>specialization</b>	all
		<b>form</b>	full-time
Faculty of Biology	Natural Resources Conservation	<b>type</b>	first tier studies (BA)
		<b>form</b>	full-time
		<b>specialty</b>	all
Faculty of Biology	Natural Resources Conservation	<b>specialization</b>	all
		<b>form</b>	full-time
		<b>specialty</b>	all
<b>Teaching staff</b>			
dr hab. Jacek Szwedo; dr hab. Wojciech Pokora, profesor uczelni			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		2 ESTIMATION OF WORKING TIME Work in contact with the teacher: Participation in lectures - 15 hours; Participation in the credit - 1.5 hours; Participation in consultations - 12.5 hours. Student independent work: Preparation to pass - 21 hours. TOTAL: 50 hours.	
Lecture			
<b>The realization of activities</b>			
classroom instruction			
<b>Number of hours</b>			
Lecture: 15 hours			
<b>The academic cycle</b>			
2022/2023 summer semester			
<b>Type of course</b>		<b>Language of instruction</b>	
an elective course		english	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
- multimedia-based lecture - seminar lecture		<b>Final evaluation</b>	
		Graded credit	
		<b>Assessment methods</b>	
		written test (test and open questions)	
		<b>The basic criteria for evaluation</b>	

1. Participation in classes - the condition for getting credit is participation in at least 80% of classes. In case of absence from classes, the Student should justify this absence by reporting to the Lecturer within 7 days - counting from the date of termination of sick leave or from the day on which he left the classes for another reason. The student is required to fill in the gaps in knowledge and skills caused by absence from classes on their own, while the gaps in knowledge and skills caused by absence from classes, in a manner indicated directly by the teacher.
2. Written test (test) covering material from lectures, activity during seminars.
3. Student's achievements are assessed according to the percentage ratio ("UG Studies Regulations").

#### Method of verifying required learning outcomes

#### Required courses and introductory requirements

##### A. Formal requirements

- Fundamentals of systematic biology.

##### B. Prerequisites

- Basic knowledge of systematic botany.
- Basic knowledge of ecology.
- Knowledge of invertebrate systematics.

#### Aims of education

- Knowledge of the most important fossil resins and their stratigraphic and geographical distribution.
- Knowledge of major taxa occurring among inclusions in fossil resins.
- The ability to infer about palaeoecology and evolution of taxa, their systematic and morphological palaeodiversity, and reconstruction of palaeoenvironments based on knowledge of inclusions in fossil resins.
- Developing interests in the sciences of evolution and phylogeny, palaeontology, as well as broadly understood amber industry.

#### Course contents

- Types of fossil resins.
- Occurrence of fossil resins in the world.
- Taphonomy of fossil resins.
- Taphonomy of inclusion.
- Organic inclusions.
- Review of phyto- and zooinclusions preserved in Baltic amber.
- The importance of inclusions in research on evolution, phylogeny and historical zoogeography of insects.
- Preparation of inclusions for scientific research.
- Recognition of imitations and techniques of amber and amber inclusions counterfeiting

#### Bibliography of literature

- Erichson U., Weitschat W. 2008. Baltic amber. German Amber Museum Ribnitz-Damgarten, Ribnitz-Damgarten.
- Grimaldi D. 1996. Amber: window to the past. American Museum of Natural History.
- Grimaldi D., Engel M.S. 2005. Evolution of the insects. Cambridge Univ. Press.
- Gröhn C. 2015. Einschlüsse im Baltischen Bernstein. Wachholtz Verlag, Kiel.
- Gröhn C. 2019. Alles über Bernstein. Wachholtz Verlag, Kiel.
- Gröhn C., Kobbert M.J. 2017. Pflanzen seit der Saurierzeit eingeschlossen in Bernstein. Wachholtz Verlag, Kiel.
- Kosmowska-Ceranowicz B. 2012. Bursztyn w Polsce i na świecie. Wydawnictwo Uniwersytetu Warszawskiego, Warszawa.
- Kosmowska-Ceranowicz B., Gierłowski W. 2005. Bursztyn. Poglądy, opinie. Bursztynowa Hossa, Gdańsk-Warszawa.
- Kosmowska-Ceranowicz B., Gierłowski W. 2010. Bursztyn. Poglądy, opinie. Tom 2. Materiały z seminariów Amberif 2005-2009. Międzynarodowe Stowarzyszenie Bursztyzników, Muzeum Ziemi PAN w Warszawie, Międzynarodowe Targi Gdańskie SA, Gdańsk-Warszawa.
- Kosmowska-Cernaowicz B., Gierłowski W., Wagner-Wysiecka E. 2016. Bursztyn. Poglądy, opinie. Tom 3. Materiały z seminariów Amberif 2010-2015. Międzynarodowe Stowarzyszenie Bursztyzników, Muzeum Ziemi PAN w Warszawie, Międzynarodowe Targi Gdańskie SA, Wydział Chemiczny Politechnika Gdańska, Gdańsk-Warszawa.
- Krzemińska E., Krzemiński W. 1992. W bursztynowej pułapce. Wyd. Inst. Syst. i Ewol. Zw. PAN, Kraków.
- Matuszewska A. 2010. Bursztyn (sukcynit), inne żywice kopalne, subfosylne i współczesne. Oficyna Wydawnicza WW, Uniwersytet Śląski, Katowice.
- Penney D. 2016. Amber palaeobiology. Research trends and perspectives for the 21st century. Siri Scientific Press, Manchester.
- Sadowski E.-M., Schmidt A.R., Seyfullah L.J., Kunzmann L. 2017. Conifers of the "Baltic amber forest" and their palaeoecological significance. Stapfia 106: 1-73.
- Szadziewski R., Pytlos R., Szwedo J. (eds.), Bursztyn bałtycki – skarb Zatoki Gdańskiej / Baltic amber – treasure of the Bay of Gdańsk. Związek

Miast i Gmin Morskich, Gdańsk.

- Szadziewski R., Szwedo J., Sontag E. 2016. Znaczenie inkluzji zwierzęcych w paleorekonstrukcjach klimatu, ekologii lasów bursztynowych oraz identyfikacji bursztynów [Significance of animal inclusions in paleoreconstructions of climate, ecology of amber forests and identification of ambers]: 42–51. In: Gazda L. (ed.) Lubelski bursztyn. Stellarium, Kraków.
- Szwedo J., Kania I. 2015. Rekonstrukcje klimatyczne na podstawie inkluzji / Climatic reconstructions based on inclusions. Amber news review 2014/2015, World Amber Council, Gdańsk, Poland, 2015, pp. 6–21. Mayor's Office for City Promotion, City Hall of Gdańsk, Gdańsk.
- Weitschat W., Wichard W. 2002. Atlas of plants and animals in Baltic amber. Verlag Dr. Friedrich Pfeil, Munich.
- Wichard W., Gröhn C., Seredusz F. 2009. Wasserinsekten im Baltischen Bernstein / Aquatic Insects in Baltic Amber. Verlag Kessel, Remagen.
- Zherikhin V. V., Ponomarenko A. G., Rasnitsyn A. P. 2008. Vvedenie v paleoentomologiyu. Tovarishchestvo Nauchnykh Izdaniy KMK, Moskva.

#### The learning outcomes (for the field of study and specialization)

Effects for Biology UG: B2\_W01, B2\_W04; B2\_U03, B2\_U07; B2\_K05

#### Knowledge

- Recognizes and characterizes the main ways of behavior of organism remains in fossil resin material (B2\_W01).
- Recognizes patterns of preservation of fossil materials and is able to link them to biotic and environmental changes at the deposition site (B2\_W01)
- Correctly identifies and interprets observed changes occurring during biostratigraphic processes (B2\_W01)
- Knows and understands the meaning of diagenetic changes, can interpret them correctly (B2\_W01)
- Knows methods of palaeontological research and is able to interpret their results (B2\_W04)
- Knows methods of evolutionary and palaeoenvironmental reconstruction and is able to interpret their results (B2\_W04)

#### Skills

- Demonstrates the ability to critically analyze and select biological and geological information, especially from online and electronic sources (B2\_U03)
- Critically confronts biological information from various sources and draws reasonable conclusions on this basis (B2\_U07)

#### Social competence

- Understands the need to use recognized sources of scientific and popular science information in the field of biological sciences and Earth sciences in order to deepen knowledge (B2\_K05)

#### Contact

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