Module syllabus: **Contemporary methods in monitoring the history of contamination of the natural environment**

1. Overall information

Module coordinator	dr hab. Bernard Palowski
Contact	bernard.palowski@us.edu.pl +48 32 3591539
ECTS	**2**
Method for the verification of learning outcomes	The final grade for the module is weighted on the average of the following student activities: - Active participation in the lecture and in the field course, and continuous evaluation of knowledge (0.7); - Written final test (0.3). To be awarded a final grade, the student must have passed each activity of the module. Grades: below 51% – fail (F); 52-60% – with minimum academic criteria (E); 61-65% – satisfactory (D); 66-75% – good (C); 76-85% – very good (B), ≥ 85% – excellent (A)

2. Description of student activity and work

Lecture/discussion sessions	
Responsible instructor	dr hab. Bernard Palowski
Content	**The main objective of this module** is to broaden the students' knowledge of contemporary methods in historical monitoring. Students will learn about the possibilities of monitoring changes in the contamination of the environment with heavy metals that occur over time: - mosses, e.g. *Chylocomium splendens*; *Pleurozium schreberi* - tree rings, e.g. *Pinus sylvestris* - museum and herbarium material - raised bog cores Students will develop their skills of critically interpreting published data on historical monitoring. **Lecture/discussion session content:** Methods of collecting peat bog cores; basics of palynology; peat bog dating.

University of Silesia in Katowice. Faculty of Biology and Environmental Protection

Jagiellonska Str. 28, PL-40032 Katowice, Poland, phone/fax +48 32 200 93 61, e-mail: biologia@us.edu.pl

www.**wbios**.us.edu.pl

Number of didactic hours (contact hours)	**6**
Literature	Alderton D.H., Coleman D.O., Burton M.A. 1985. Historical Monitoring. University of London. Jones J. M. Hao J. 1993. Ombrotrophic peat as a medium for historical monitoring of heavy metal pollution. Environmental Geochemistry and Health. 15 (2/3): 67-74. Onianwa P. C. 2001. Monitoring atmospheric metal pollution: a review of the use of mosses as indicators. Environmental Monitoring and Assessment. 71: 13-50 Fiałkiewicz-Kozieł B., Śmieja-Król B., Palowski B. 2010. Multiproxy Environmental Studies in Poland Using Peatlands. In: Mires and Peat. (Ed. Klavins M.) University of Latvia Press. Riga.: 9 – 18.

Field course	
Responsible instructors	dr hab. Bernard Palowski
Field course	Field course in the Nowy Targ Basin near the village of Piekielnik – raised bog "Puścizna Mała" and near the village of Czarny Dunajec – raised bog "Baligówka". Field course in the peat bog "Bagno Bruch" near the village of Bibiela. During the field course, students are acquainted with a raised bog ecosystem. They will learn about practical ways of sampling peat for monitoring tests.
Number of didactic hours (contact hours)	24
Literature	Alderton D.H., Coleman D.O., Burton M.A. 1985. Historical Monitoring. University of London. Śmieja-Król B., Fiałkiewicz-Kozieł B., Sikorski J., Palowski B. 2010. Heavy metal behaviour in peat – A mineralogical perspective. Science of the Total Environment. 408: 5924 – 5931.

3. Forms of verification

Continuous evaluation of knowledge	
Grades	Grades are awarded on a scale of A-F, where A is the best and F is a fail.

University of Silesia in Katowice. Faculty of Biology and Environmental Protection
Jagiellonska Str. 28, PL-40032 Katowice, Poland, phone/fax +48 32 200 93 61, e-mail: biologia@us.edu.pl

www.wbios.us.edu.pl

	An excellent performance (A) – the student actively participates in lecture and in field course, is engaged and creative in solving current problems. A good performance (C) – the student demonstrates a good judgment and knowledge, correctly exhibits a sense of an experimental procedure. A satisfactory performance (E) – the student demonstrates a satisfactory judgment and knowledge, is poorly engaged and needs additional help. A performance that does not meet the minimum academic criteria (F) – the students is not engaged in lecture problems and in field course.

Final exam	
Grades	Grades are awarded on a scale: A-F, where A is the highest and F is a fail. Excellent (A) – the student presents a fluent knowledge of the mechanisms of heavy metal contamination of the environment and other aspects of the historical monitoring of the contamination of the environment, has minimal errors that do not affect the quality of the presentation. Good (C) – the student presents a good knowledge of the mechanisms of heavy metal contamination of the environment and other aspects of the historical monitoring of the contamination of the environment, makes rare but subtle errors. Satisfactory (E) – the student exhibits a satisfactory knowledge, but with a poor understanding of the mechanisms of heavy metal contamination of the environment and other aspects of the historical monitoring of the contamination of the environment, and makes subtle errors. Fail (F) – the student does not present a satisfactory knowledge of the mechanisms of heavy metal contamination of the environment and other aspects of the historical monitoring of the contamination of the environment, and makes a lot of substantial errors, which disqualify their presentation.

University of Silesia in Katowice. Faculty of Biology and Environmental Protection
Jagiellonska Str. 28, PL-40032 Katowice, Poland, phone/fax +48 32 200 93 61, e-mail: biologia@us.edu.pl

www.wbios.us.edu.pl