KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI
FUNDUSZ SPOŁECZNY

| Course title | ECTS code |
|---|---|
| Pollution of lakes – Paleoenvironmental Perspective | 6.9.0019 |

**Name of unit administrating study**

null

**Studies**

| faculty | field of study | | |
|---|---|---|---|
| Faculty of Oceanography and Geography | Oceanography | type | first tier studies (BA) |
| | | form | full-time |
| | | specialty | all |
| | | specialization | all |

**Teaching staff**

dr hab. Wojciech Tylmann

**Forms of classes, the realization and number of hours**

**Forms of classes**

Wykład (to translate)

**The realization of activities**

blended learning, lectures in the classroom

**Number of hours**

Wykład (to translate): 15 hours

**ECTS credits**

2

2021/2022 winter semester

**Type of course**

elective (to translate)

**Language of instruction**

english

**Teaching methods**

- Analiza tekstów z dyskusją (to translate)
- Metoda projektów (projekt badawczy, wdrożeniowy, praktyczny) (to translate)
- Praca w grupach (to translate)
- Projektowanie doświadczeń (to translate)
- Wykład konwersatoryjny (to translate)
- Wykład problemowy (to translate)
- Wykład z prezentacją multimedialną (to translate)

**Form and method of assessment and basic criteria for eveluation or examination requirements**

**Final evaluation**

Egzamin (to translate)

**Assessment methods**

egzamin pisemny testowy (to translate)

**The basic criteria for evaluation**

Module 1 “Sediments – a memory of lake ecosystem” (20%),
Module 2 “Methods of reconstructions – a paleolimnological toolkit” (30%),
Module 3 “Case studies – major problems investigated using paleolimnological approach” (50%)

**Sposób weryfikacji założonych efektów kształcenia (DO TŁUMACZENIA)**

**Required courses and introductory requirements**

**A. Formal requirements**

None

**B. Prerequisites**

None

**Aims of education**

The overall goals of this course are to: (1) provide students with an introduction to the concepts and techniques useful for studying the nature of past environmental change; (2) present the possibilities of using lake sediments to reconstruct pollution changes at different time scales; (3) highlight the role of interdisciplinary research in understanding environmental change in the past. The course has been designed to give opportunity for discussion on particular case studies.

**Course contents**

Course contents
Module 1: Sediments – a memory of lake ecosystems

Introduction to the course (1 hour).
Lake sediments as environmental archives (2 hours).
Geochronological clock in lake sediments (2 hours).
Module 2: Methods of reconstructions – a paleolimnological toolkit
Environmental proxy data in sediments and their interpretation (2 hours).
Calibration of proxy data – toward quantitative reconstructions (2 hours).
Module 3: Case studies – pollution-related problems investigated using paleolimnological approach
Eutrophication – tracking the causes and symptoms of land-use change and over-fertilization (2 hours).
Acidification – inferring the consequences of industrial pollution and acidic precipitation (2 hours).
Heavy metals and persistent organic pollutants – history of environmental pollution (2 hours).

## Bibliography of literature

Bibliography of literature
Textbooks:
Birks H.J.B., Lotter A.F., Juggins S., Smol J.P. (eds.), 2012. Tracking Environmental Change Using Lake Sediments. Volume 5: Data Handling and Numerical Techniques. Kluwer, Dordrecht, The Netherlands.
Last W.M., Smol J.P. (eds.), 2001. Tracking Environmental Change Using Lake Sediments. Volume 1: Basin Analysis, Coring, and Chronological Techniques. Kluwer, Dordrecht, The Netherlands.
Last W.M., Smol J.P. (eds.), 2001. Tracking Environmental Change Using Lake Sediments. Volume 2: Physical and Geochemical Methods. Kluwer, Dordrecht, The Netherlands.
Smol J.P., Birks H.J.B., Last W.M. (eds.), 2002. Tracking Environmental Change Using Lake Sediments. Volume 3: Terrestrial, Algal, and Siliceous Indicators. Kluwer, Dordrecht, The Netherlands.
Smol J.P., Birks H.J.B., Last W.M. (eds.), 2002. Tracking Environmental Change Using Lake Sediments. Volume 4: Zoological Indicators. Kluwer, Dordrecht, The Netherlands.
Smol J., 2008. Pollution of Lakes and Rivers. A Paleoenvironmental Perspective, Kluwer.

Journals:
Journal of Paleolimnology is the primary source for paleolimnological articles, although the dissemination of papers in this field can be found in several other journals including The Holocene, Palaeogeography, Palaeoclimatology, Palaeoecology, Quaternary Research, Quaternary Science Reviews, Limnology and Oceanography, etc.
Internet:
PAGES Past Global Changes http://www.pages.unibe.ch



## Knowledge

Knowledge
K_W03 Describing how information about past environmental change is archived in lake sediments.
K_W05 Recalling interpretation of proxy indicators used in the paleolimnological studies.
K_W06 Defining advantages and disadvantages of using lakes sediments for environmental pollution reconstruction.
K_W08 Explaining significance of paleoenvironmental reconstruction in the assessment of the present state and predicting future changes of the environment.

## Skills

Skills
K_U04 Selecting appropriate methods to reconstruct past pollution from lake sediments.
K_U06 Proposing solutions to a specific problem in the field of reconstruction of pollution changes in lakes.
K_U11 Developing the professional skills through interdisciplinary character of the acquired knowledge

## Social competence

Social competence
K_K03Participating in class discussions with colleagues and lecturers.

## Contact

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