

**PROGRAMME
of Scientific internship**

"Integration of Interdisciplinary Pedagogical Innovations in Teaching Natural Sciences: Implementation of Polish Experience in the Higher Education System of Ukraine"

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State Pedagogical University named after A.S. Makarenko (Sumy, Ukraine)
Hosted by the Institute of Biology, Pomeranian University in Słupsk (Poland)**

Duration: May 12 – June 14, 2025

Format: online (May 12 – June 8, June 14); on-site (June 9–13)

ECTS Credits: 6 ECTS (180 hours)

The purpose of the internship is to master innovative interdisciplinary approaches in teaching natural sciences and to adapt advanced Polish practices to enhance the quality and efficiency of the educational process in Ukrainian higher education institutions.

Online Module (May 12 – June 8)

Format:

- *familiarization with methodological and video materials;*
- *online meetings (Zoom) with teachers of the Institute of Biology and the Institute of Geography (1-2 times a week);*
- *completion of individual assignments;*
- *Preparation of a mini-project on the adaptation of Polish experience in conducting hydrological and geo-environmental research to the educational process in Ukraine.*

Week 1 (May 12–18, 2025)

Topic: Methodological Aspects of Interdisciplinary Integration in Teaching Natural Sciences.

- *Comparative analysis of teaching approaches in natural sciences in Polish and Ukrainian higher education systems.*
- *Competency-based paradigm in teaching natural science subjects.*
- *Transformation of methodological approaches to experimental activities in the context of interdisciplinary integration.*
- *Philosophy of STEM education and its implementation in European higher education institutions.*

Week 2 (May 19–25, 2025)

Topic: Digital Transformation of the Educational Environment and Innovative Didactic Approaches in Teaching Natural Sciences.

- *Digitalization of the educational process: methodological and practical aspects of integrating digital technologies in teaching natural sciences, particularly geography.*



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- *Virtual and augmented reality in developing experimental competencies: the experience of Polish universities.*
- *Methods for enhancing students' cognitive engagement in virtual learning environments.*
- *Adapting traditional methodologies to a digital educational environment: effective solutions and implementation strategies.*

Week 3 (May 26 – June 1, 2025)

Topic: A Systemic Approach to Developing Critical and Scientific Thinking Through Interdisciplinary Educational and Research Practices.

- *Modern approaches to the development of educational materials in natural sciences, particularly geographical sciences.*
- *Innovations in teaching and research: modern teaching methods, research initiatives.*
- *Implementation of research results in the educational process in geography (STEM, GIS, case method).*
- *Formation of an inclusive educational environment in natural sciences teaching: European experience and learning material adaptation practices.*

Week 4 (June 2–8, 2025)

Topic: Innovative Approaches to Assessment and Professional Competence Development in the Context of European Integration of Higher Education.

- *Modern approaches to formulating educational goals and assessing learning outcomes.*
- *Methodology for developing integrated educational courses based on an interdisciplinary approach.*
- *Implementation of formative assessment principles in teaching natural sciences.*
- *Portfolio as a tool for teachers' professional development and assessment of students' academic achievements.*

On-site Module (June 9–13, 2025)

June 9

Introductory meeting with administration and faculty of the Institute of Biology: discussion of the on-site internship programme.

Lecture-discussion: "Integration Processes in Poland's Natural Science Education: From Theory to Practice".

Practical seminar: "Methodology of Designing Interdisciplinary Educational Programmes in Accordance with European Quality Standards".

June 10

Visits to laboratories and research centers of the Institute of Geography: infrastructure and research potential analysis.

Ukrainian and Polish higher education systems: comparison of study programmes in the field of Natural Sciences, speciality Earth Sciences (Geography)

Workshop 'Field training practice in geography'.

Discussion: "Implementation of research results in the educational process in geography."



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June 11

Scientific-methodological seminar: "Didactics of Natural Sciences in the Context of Modern Educational Paradigms".

Practicum: "Developing Interdisciplinary Research Projects for Students of Natural Science Specialties".

Workshop: "Creating Inclusive Learning Environments in Natural Science Teaching: Practical Experience of Polish Higher Education Institutions".

June 12

Workshop: "Geo-environmental research as an integrative element in teaching natural sciences".

Presentation of the author's methods of teaching Hydrology, Hydroecological Monitoring, Geology, Geoecology within the interdisciplinary framework.

Discussion: "Development of professional competences of a science teacher: European experience".

June 13

Workshop: "Current Trends in European Natural Science Education".

Presentation of internship results: "Integration of Polish Experience in Natural Science Teaching in Ukrainian HEIs".

Summary session: reflection on the outcomes of the on-site module and discussion of future cooperation opportunities

FINAL STAGE (June 14, 2025)

Online Format

Finalisation of the project on the integration of interdisciplinary approaches to teaching natural sciences, namely hydrology, hydroecological monitoring, geology and geoecology.

Preparation of reporting documentation based on the results of the internship.

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