Uniwersytet Pomorski w Słupsku
Instytut Biologii
Uniwersytet Pomorski w Słupsku

UNIWERSYTET POMORSKI
w Słupsku
Instytut Biologii
ul. Arciszewskiego 22b, 76-200 Słupsk
tel. 59 84 05 413
IB.007.76.2025

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

Liudmyla Mironets, PhD in Pedagogical Sciences, Associate Professor, Associate Professor of the Department of Biology and Methods of Teaching Biology, Dean of the Faculty of Natural Sciences and Geography, Sumy State Pedagogical University named after A.S. Makarenko (Sumy, Ukraine)
Hosted by the Institute of Biology, Pomeranian University in Slupsk (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 faculty members of the Institute of Biology (1–2 times per week);*
- *completion of individual assignments;*
- *development of a mini-project on adapting Polish experience to the Ukrainian educational context.*

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 biology.*

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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.*
- *Methodology for designing interdisciplinary research tasks aimed at fostering critical thinking.*
- *Formation of an inclusive educational environment in natural sciences teaching: European experience and learning material adaptation practices.*
- *Forming a holistic scientific worldview through natural sciences education.*
- *Problem-based learning as a tool for developing research competencies.*

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 Biology: infrastructure and research potential analysis.
Workshop: "Innovative Experimental Practices and Their Integration into the Teaching of Biology Disciplines".
Discussion: "Implementing Research Findings into the Educational Process: An Interdisciplinary Perspective".

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June 11

Scientific-methodological seminar: "Didactics of Natural Sciences in the Context of Modern Educational Paradigms".
Workshop: "Creating Inclusive Learning Environments in Natural Science Teaching: Practical Experience of Polish Higher Education Institutions"
Practicum: "Developing Interdisciplinary Research Projects for Students of Natural Science Specialties".

June 12

Workshop: 'Digitalization of education as a vector for training specialists of the XXI century'.
Presentation of authorial teaching methodologies within the interdisciplinary framework.
Discussion: "Professional Competency Development of Natural Science Teachers: 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

Finalization of the project on integrating interdisciplinary approaches into natural sciences teaching.
Preparation of final reporting documentation based on the internship results.

DYREKTOR
INSTYTUTU BIOLOGII
Tomasz Hetmański
Dr hab. Tomasz Hetmański, prof. UP

Tomasz Hetmański, D.Sc., Prof., Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Halina Tkaczenko
Dr hab. Halina Tkaczenko, prof. UP

Halina Tkaczenko, D.Sc., Prof., Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Brygida Radawiec
Dr Brygida Radawiec

Brigida Radawiec, Ph.D., Associate Professor, Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

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18.007.79.2025

Uniwersytet Pomorski w Słupsku

Instytut Biologii
Uniwersytet Pomorski w Słupsku

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

Mykola Moskalenko, PhD in Biology,
Associate Professor, Associate Professor of the Department of Biology and Methods of Teaching Biology,
Sumy State Pedagogical University named after A. S. Makarenko
(Sumy, Ukraine)

Hosted by the Institute of Biology, Pomeranian University in Slupsk (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 the methodological support of the internship program;*
- *online meetings (Zoom) with faculty members of the Institute of Biology (1–2 times per week);*
- *completion of individual assignments;*
- *development of a mini-project on adapting Polish experience to the Ukrainian educational context.*

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.*

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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 biology and ecology.*
- *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.*
- *Methodology for designing interdisciplinary research tasks aimed at fostering critical thinking.*
- *Formation of an inclusive educational environment in natural sciences teaching: European experience and learning material adaptation practices.*
- *Forming a holistic scientific worldview through natural sciences education.*
- *Problem-based learning as a tool for developing research competencies.*

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 Biology: infrastructure and research potential analysis.

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Workshop: "Innovative Experimental Practices and Their Integration into the Teaching of Biological Disciplines".
Discussion: "Implementing Research Findings into the Educational Process: An Interdisciplinary Perspective".

June 11

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

June 12

Workshop: "The Biological Experiment as an Integrative Element in Natural Science Teaching".
Presentation of authorial teaching methodologies within the interdisciplinary framework.
Discussion: "Professional Competency Development of Natural Science Teachers: 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

Finalization of the project on integrating interdisciplinary approaches into natural sciences teaching.
Preparation of final reporting documentation based on the internship results.

DYREKTOR
INSTYTUTU BIOLOGII
Tomasz Hetmański
Dr hab. Tomasz Hetmański, prof. UP

Tomasz Hetmański, D.Sc., Prof., Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Halina Tkaczenko
Dr hab. Halina Tkaczenko, prof. UP

Halina Tkaczenko, D.Sc., Prof., Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Brygida Radawiec
Dr Brygida Radawiec

Brigida Radawiec, Ph.D., Associate Professor, Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

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Uniwersytet Pomorski w Słupsku

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

Olena Babenko, PhD in Pedagogical Sciences,
Associate Professor, Head of the Department of Human Biology, Chemistry and Methods of Teaching Chemistry, Sumy State Pedagogical University named after A.S. Makarenko (Sumy, Ukraine)

Hosted by the Institute of Biology, Pomeranian University in Slupsk (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 faculty members of the Institute of Biology (1–2 times per week);*
- *completion of individual assignments;*
- *development of a mini-project on adapting Polish experience to the Ukrainian educational context.*

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 chemistry.*

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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.*
- *Methodology for designing interdisciplinary research tasks aimed at fostering critical thinking.*
- *Formation of an inclusive educational environment in natural sciences teaching: European experience and learning material adaptation practices.*
- *Forming a holistic scientific worldview through natural sciences education.*
- *Problem-based learning as a tool for developing research competencies.*

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 Biology: infrastructure and research potential analysis.
Workshop: "Innovative Experimental Practices and Their Integration into the Teaching of Chemistry Disciplines".
Discussion: "Implementing Research Findings into the Educational Process: An Interdisciplinary Perspective".

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June 11

Scientific-methodological seminar: "Didactics of Natural Sciences in the Context of Modern Educational Paradigms".
Workshop: "Creating Inclusive Learning Environments in Natural Science Teaching: Practical Experience of Polish Higher Education Institutions".
Practicum: "Developing Interdisciplinary Research Projects for Students of Natural Science Specialties".

June 12

Workshop: "The Chemistry Experiment as an Integrative Element in Natural Science Teaching".
Presentation of authorial teaching methodologies within the interdisciplinary framework.
Discussion: "Professional Competency Development of Natural Science Teachers: 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

Finalization of the project on integrating interdisciplinary approaches into natural sciences teaching.
Preparation of final reporting documentation based on the internship results.

DYREKTOR
INSTYTUTU BIOLOGII
Tomasz Hetmański
Dr hab. Tomasz Hetmański, prof. UP

Tomasz Hetmański, D.Sc., Prof., Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Halina Tkaczenko
Dr hab. Halina Tkaczenko, prof. UP

Halina Tkaczenko, D.Sc., Prof., Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Brygida Radawiec
Dr Brygida Radawiec

Brigida Radawiec, Ph.D., Associate Professor, Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

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Uniwersytet Pomorski w Słupsku

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

Olena Danylchenko, PhD in Geographical Sciences, Associate Professor, Associate Professor of the Department of General and Regional Geography, Sumy State Pedagogical University named after A.S. Makarenko (Sumy, Ukraine)
Hosted by the Institute of Biology, Pomeranian University in Slupsk (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.

DYREKTOR INSTYTUTU BIOLOGII
Dr hab. Tomasz Hetmański, prof. UP

Tomasz Hetmański, D.Sc., Prof., Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA INSTYTUTU BIOLOGII
Dr hab. Halina Tkaczenko, prof. UP

Halina Tkaczenko, D.Sc., Prof., Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA INSTYTUTU BIOLOGII
Dr Brygida Radawiec

Brigida Radawiec, Ph.D., Associate Professor, Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

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IB.007.82.2025

Uniwersytet Pomorski w Słupsku

Instytut Biologii
Uniwersytet Pomorski w Słupsku

PROGRAMME
of Scientific internship
"Integration of Interdisciplinary Pedagogical Innovations in Teaching Natural Sciences: Implementation of Polish Experience in the Higher Education System of Ukraine"
Olena Korol, PhD in Pedagogical Sciences, Associate Professor,
Associate Professor of the Department of General and Regional Geography, Sumy State Pedagogical University named after A.S. Makarenko (Sumy, Ukraine)
Hosted by the Institute of Biology, Pomeranian University in Slupsk (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 adapt the European experience of using remote sensing and GIS technologies in teaching natural sciences to higher education students.

Online Module (May 12 – June 8)

Format:

- *familiarization with methodological and video materials;*
- *online meetings (Zoom) with faculty members of the Institute of Biology (1–2 times per week);*
- *completion of individual assignments;*
- *development of a mini-project to adapt the European experience of using remote sensing and GIS technologies in teaching natural sciences to higher education students.*

Week 1 (May 12–18, 2025)

Topic: *Methodological aspects of the integration of European experience in teaching natural sciences by means of GIS and remote sensing technologies for higher education students.*

- *Analysis of approaches to teaching natural sciences by means of remote sensing and GIS technologies*
- *Competence paradigm in teaching natural sciences by means of remote sensing and GIS technologies.*
- *Philosophy of using remote sensing and GIS technologies 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 using remote sensing and GIS technologies.

- *Digitalisation of the educational process: methodological and practical aspects of implementing remote sensing and GIS technologies in teaching natural sciences, in particular geography.*
- *Activation of students' cognitive activity by means of remote sensing and GIS technologies*

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– *Adaptation of traditional methods to the geographic information environment: effective solutions and implementation strategies.*

Week 3 (May 26 – June 1, 2025)

Topic: Gaining new professional experience in working with GIS resources and geoinformation programmes through educational and research practices.

– *Modern Geoinformation Resources and Programmes for the Development of Educational Materials in Natural Sciences.*
– *Methodology for Developing Research Tasks Based on Geoinformation Resources and Programmes.*
– *Modelling with the Help of Geoinformation Resources and Programmes as a Means of Developing Research Competences.*
– *Formation of an inclusive educational environment in natural sciences teaching: European experience and learning material adaptation practices.*

Week 4 (June 2–8, 2025)

Topic: Spatial analysis and data visualisation in natural science research - the European experience of higher education.

– *Methodology of developing educational courses based on spatial analysis and data visualisation in natural sciences.*
– *Application of methods of spatial analysis and data visualisation in natural sciences in teaching natural sciences*
– *Data visualisation in natural sciences is the basis of teacher's professional growth and development of students' learning 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 of remote sensing and GIS technologies into the system of European science education: from theory to practice'.
Practical seminar: «Methodology for implementing remote sensing and GIS technologies in science education: European quality standards».

June 10

Visits to laboratories and research centers of the Institute of Biology: infrastructure and research potential analysis.
Workshop: «Practice of using remote sensing and GIS technologies and their integration into the process of teaching geographical disciplines».
Discussion: «Implementation of research results using remote sensing and GIS technologies in the educational process: European experience».

June 11

Scientific-methodological seminar: «Formation of a holistic scientific picture of the world through the use of remote sensing and GIS technologies in the process of studying natural sciences».

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Practicum: «Development of research projects on the use of remote sensing and GIS technologies for students of natural sciences».
Workshop: "Creating Inclusive Learning Environments in Natural Science Teaching: Practical Experience of Polish Higher Education Institutions".

June 12

Workshop: «Remote sensing and GIS technologies in teaching natural sciences».
Presentation of the author's methods of implementing remote sensing and GIS technologies in teaching natural sciences.
Discussion 'Development of GIS competences of science teachers: European experience'.

June 13

Workshop: "Current Trends in European Natural Science Education".
Presentation of internship results: «Integration of European experience in teaching natural sciences using remote sensing and GIS technologies».
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 a project to introduce remote sensing and GIS technologies into science teaching.
Preparation of final reporting documentation based on the internship results.

DYREKTOR
INSTYTUTU BIOLOGII
Dr hab. Tomasz Hetmański, prof. UP

Tomasz Hetmański, D.Sc., Prof., Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Dr hab. Halina Tkaczenko, prof. UP

Halina Tkaczenko, D.Sc., Prof., Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Dr Brygida Radawiec

Brigida Radawiec, Ph.D., Associate Professor, Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

UNIWERSYTET POMORSKI
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IB 007.80.2025

Uniwersytet Pomorski w Słupsku

Instytut Biologii
Uniwersytet Pomorski w Słupsku

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

Valentyna Torianyk, PhD in Biology,
Associate Professor, Associate Professor of the Department of Biology and Methods of Teaching Biology,
Sumy State Pedagogical University named after A. S. Makarenko
(Sumy, Ukraine)

Hosted by the Institute of Biology, Pomeranian University in Slupsk (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 the methodological support of the internship program;*
- *online meetings (Zoom) with faculty members of the Institute of Biology (1–2 times per week);*
- *completion of individual assignments;*
- *development of a mini-project on adapting Polish experience to the Ukrainian educational context.*

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.

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- *Digitalization of the educational process: methodological and practical aspects of integrating digital technologies in teaching natural sciences, particularly biology and ecology.*
- *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.*
- *Methodology for designing interdisciplinary research tasks aimed at fostering critical thinking.*
- *Formation of an inclusive educational environment in natural sciences teaching: European experience and learning material adaptation practices.*
- *Forming a holistic scientific worldview through natural sciences education.*
- *Problem-based learning as a tool for developing research competencies.*

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 Biology: infrastructure and research potential analysis.

Workshop: "Innovative Experimental Practices and Their Integration into the Teaching of Biological Disciplines".

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Discussion: "Implementing Research Findings into the Educational Process: An Interdisciplinary Perspective".

June 11

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

June 12

Workshop: "The Biological Experiment as an Integrative Element in Natural Science Teaching".
Presentation of authorial teaching methodologies within the interdisciplinary framework.
Discussion: "Professional Competency Development of Natural Science Teachers: 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

Finalization of the project on integrating interdisciplinary approaches into natural sciences teaching.
Preparation of final reporting documentation based on the internship results.

DYREKTOR
INSTYTUTU BIOLOGII
Dr hab. Tomasz Hetmański, prof. UP

Tomasz Hetmański, D.Sc., Prof., Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
INSTYTUTU BIOLOGII
Dr hab. Halina Tkaczenko, prof. UP

Halina Tkaczenko, D.Sc., Prof., Vice-Director of the Institute of Biology, Pomeranian University in Słupsk

Z-CA DYREKTORA
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Dr Brygida Radawiec

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

Yuliia Vakal, PhD,
Senior Lecturer of the Department of Human Biology, Chemistry and Methods of Teaching Chemistry, Sumy State Pedagogical University named after A.S. Makarenko (Sumy, Ukraine)

Hosted by the Institute of Biology, Pomeranian University in Slupsk (Poland)
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- *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 chemistry.*

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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.*
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June 11

Scientific-methodological seminar: "Didactics of Natural Sciences in the Context of Modern Educational Paradigms".
Workshop: "Creating Inclusive Learning Environments in Natural Science Teaching: Practical Experience of Polish Higher Education Institutions".
Practicum: "Developing Interdisciplinary Research Projects for Students of Natural Science Specialties".

June 12

Workshop: "The Chemistry Experiment as an Integrative Element in Natural Science Teaching".
Presentation of authorial teaching methodologies within the interdisciplinary framework.
Discussion: "Professional Competency Development of Natural Science Teachers: European Experience".

June 13

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