1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Advanced Programming**
Module code	W4-MT-S1-25-PZaw
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	The student will develop his programming skills in a high-level language (files and exceptions, creating modules). In addition, the student will learn the object-oriented programming paradigm and working with various libraries.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PZaw_01	The student is able to prepare an algorithm in the form of pseudocode and encode it in a high-level language.	KN_I_U03 KN_I_U04 K_U07 K_U09	3 5 2 5
PZaw_02	The student has structured knowledge of high-level language syntax. The student knows the principles of constructing multi-module programs.	KN_I_W04 K_W06 K_W07	4 5 2
PZaw_03	The student is able to cooperate in a team working on different aspects of the same project.	KN_I_U11 K_U15	4 5
PZaw_04	The student understands the need for self-education and compliance with ethical and legal principles.	K_K01 KN_I_K01 KN_I_K02	5 5 5
PZaw_05	The student knows the health and safety rules of the computer laboratory.	KN_I_W10	5
PZaw_06	complies with occupational health and safety rules in the computer lab	KN_I_U12	5

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
W4-MT-S1-23-PZaw	laboratory classes	45	course work	PZaw_01, PZaw_02, PZaw_03, PZaw_04, PZaw_05, PZaw_06	b02, b08, b09, c07, d01, e01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the*	Yes

		range of activities indicated in it as required for full participation in classes	
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Algebra**
Module code	W4-MT-S1-25-Alg
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu „Algebra” jest wykształcenie u słuchaczy umiejętności dostrzegania i identyfikowania struktur algebraicznych takich jak grupy, pierścienie i ciała, a także posługiwania się własnościami tych struktur i ich homomorfizmów. W ramach kursu przewiduje się realizację następujących treści programowych: 1. Teoria grup: grupy i podgrupy, podgrupy normalne i grupy ilorazowe, homomorfizmy grup. 2. Teoria pierścieni przemiennych: pierścienie i podpierścienie, ideały i pierścienie ilorazowe, homomorfizmy pierścieni, elementy teorii podzielności w pierścieniach całkowitych. 3. Teoria ciał: ciała, podciała i rozszerzenia ciał, monomorfizmy ciał, elementy algebraiczne nad ciałem.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
Alg_1	zna główne pojęcia z zakresu teorii grup, teorii pierścieni i teorii ciał	K_W02 K_W04	3 3
Alg_2	potrafi posługiwać się pojęciami z zakresu teorii grup, teorii pierścieni i teorii ciał oraz dowodzić głównych własności poznanych struktur algebraicznych	K_U01	2
Alg_3	zna schematy dowodów kluczowych twierdzeń algebraicznych poznanych na wykładzie	K_W02 K_W03	3 3
Alg_4	potrafi konstruować struktury algebraiczne, ich podstrukty, struktury ilorazowe oraz produktowe, a także ich morfizmy	K_U01	3
Alg_5	potrafi weryfikować własności poznanych struktur algebraicznych w konkretnych sytuacjach	K_U01	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
Alg_fs_1	lecture	30	exam	Alg_1, Alg_2, Alg_3, Alg_4, Alg_5	a01
Alg_fs_2	discussion classes	30	course work	Alg_1, Alg_2, Alg_3, Alg_4, Alg_5	e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Algebra A**
Module code	W4-MT-S1-25-AlgA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Moduł „Algebra A” ma na celu wykształcenie umiejętności swobodnego posługiwania się najważniejszymi pojęciami i narzędziami algebry w zakresie grup, pierścieni i ciał. Przewiduje się realizację następujących treści programowych: 1. Teoria grup: grupy i podgrupy, podgrupy normalne i grupy ilorazowe, homomorfizmy grup. 2. Teoria pierścieni przemiennych: pierścienie i podpierścienie, ideały i pierścienie ilorazowe, homomorfizmy pierścieni, elementy teorii podzielności w pierścieniach całkowitych. 3. Teoria ciał: ciała, podciała i rozszerzenia ciał, monomorfizmy ciał, elementy algebraiczne nad ciałem.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EAAbA_1	zna i rozumie najważniejsze pojęcia z zakresu teorii grup, teorii pierścieni i teorii ciał, zna przykłady ilustrujące dyskutowane pojęcia pojawiające się w różnych dziedzinach matematyki	K_W04 K_W05	3 3
EAAbA_2	potrafi dowodzić własności poznanych struktur algebraicznych	K_U01 K_U04	2 3
EAAbA_3	zna i rozumie schematy dowodów kluczowych twierdzeń dotyczących grup, pierścieni i ciał	K_W02 K_W03 K_W04	2 2 3
EAAbA_4	potrafi konstruować podstruktury poznanych struktur algebraicznych, grupy i pierścienie ilorazowe oraz potrafi zadawać strukturę grupy/pierścienia na produkcie kartezjańskim grup/pierścieni	K_U01 K_U04	3 3
EAAbA_5	potrafi zweryfikować czy dane struktury, spotykane w różnych działach matematyki, spełniają aksjomatykę grupy, pierścienia lub ciała	K_U01 K_U04	3 3

EAAbA_6	potrafi sprawdzać czy dana funkcja jest morfizmem struktur algebraicznych oraz konstruować morfizmy o zadanych własnościach	K_U01 K_U04	3 3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
EAAbA_fs_1	lecture	30	exam	EAAbA_1, EAAbA_2, EAAbA_3, EAAbA_4, EAAbA_5, EAAbA_6	a01
EAAbA_fs_2	discussion classes	30	course work	EAAbA_1, EAAbA_2, EAAbA_3, EAAbA_4, EAAbA_5, EAAbA_6	e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as*	Yes

		well as from the notes or other materials/artifacts made in class	
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Algorithms and Programming**
Module code	W4-MT-S1-25-AiP
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem kursu jest zapoznanie studentów z głównymi algorytmami i elementami programowania. W trakcie laboratoriów, które będą odbywały się w pracowni komputerowej, studenci będą mieli możliwość napisania programów wykorzystujących omawiany materiał. Natomiast w trakcie konwersatoriów, odbywających się w klasycznej sali tablicowej, będzie możliwość głębszego i teoretycznego omówienia wprowadzonego materiału. Realizowane treści kształcenia: 1. Elementy algorytmiki: problem i jego specyfikacja; algorytm i różne sposoby jego zapisu. 2. Elementy analizy algorytmów. Rozmiar danych, złożoność obliczeniowa (czasowa i pamięciowa). Typy złożoności: pesymistyczna, optymistyczna, średnia. Notacja asymptotyczna, rzędy wielkości funkcji. 3. Algorytmy iteracyjne i rekurencyjne; metoda dziel i zwyciężaj. 4. Algorytmy klasyczne w tym m.in.: - obliczania pochodnej wielomianu za pomocą schematu Hornera, - algorytmy Euklidesa w wersji iteracyjnej i rekurencyjnej wraz z zastosowaniami, - operujące na liczbach (badania pierwszości liczby, zamiany reprezentacji liczb między pozycyjnymi systemami liczbowymi, działań na ułamkach z wykorzystaniem NWD i NWW), - operujące na tekstach (porównywania tekstów, wyszukiwania wzorca w tekście metodą naiwną, szyfrowania tekstu metodą Cezara i przestawieniową), - wyszukiwania elementów w dowolnej tablicy (algorytm sekwencyjny) oraz w tablicy uporządkowanej (metoda wyszukiwania binarnego) - sortujące (sortowanie przez wstawianie, przez wybieranie, bąbelkowe, przez scalanie, szybkie), - znajdowania określonego elementu w zbiorze: maksymalnego, lidera oraz idola, - generowania liczb pierwszych metodą sita Eratostenesa, - jednoczesnego wyszukiwania elementu najmniejszego i największego (algorytm iteracyjny oraz rekurencyjny wykorzystujący metodę dziel i zwyciężaj), - szybkiego potęgowania liczb w wersji iteracyjnej i rekurencyjnej, - problem wież z Hanoi (rozwiązanie rekurencyjne). 5. Różne metody i techniki programowania: - podejście zachłanne (wydawania reszty najmniejszą liczbą nominałów, pakowanie plecaka), - programowanie dynamiczne (pakowanie plecaka, szukania najdłuższego wspólnego podciągu), - algorytmy z nawrotami (problem n-hetmanów). 6. Implementacja poznanych algorytmów w wybranym języku programowania wysokiego poziomu.
List of modules that must be completed before starting this	not applicable

module (if necessary)	

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
AiP_01	testuje na komputerze swoje programy pod względem zgodności z przyjętymi założeniami i ewentualnie je poprawia, objaśnia przebieg działania programów	KN_I_U04	5
AiP_02	formułuje problem w postaci specyfikacji (czyli opisuje dane i wyniki) i wyróżnia kroki w algorytmicznym rozwiązywaniu problemów; zna pojęcie algorytmu i stosuje różne sposoby przedstawiania algorytmów, w tym w języku naturalnym, w postaci schematów blokowych, listy kroków, w pseudokodzie oraz w wybranym języku programowania	KN_I_W03	5
AiP_03	zna i zapisuje klasyczne algorytmy za pomocą listy kroków, schematu blokowego lub pseudokodu oraz implementuje je w wybranym języku programowania; zna i omawia sytuacje, w których wykorzystuje się klasyczne algorytmy	KN_I_U03 KN_I_U04 KN_I_W03	5 5 5
AiP_04	zna własności algorytmów; prezentuje przykłady zastosowań algorytmiki w innych dziedzinach nauki	KN_I_U03 KN_I_W03	3 3
AiP_05	rozwija znajomość algorytmów i wykonuje eksperymenty z algorytmami; rozumie potrzebę programowania z użyciem zaawansowanych algorytmów	KN_I_K02 KN_I_U03 KN_I_W03	3 3 3
AiP_06	zna i rozumie pojęcie złożoności obliczeniowej (czasowej i pamięciowej) oraz notacji asymptotycznej	KN_I_W03	4
AiP_07	potrafi przeprowadzić analizę złożoności obliczeniowej danego algorytmu	KN_I_U03	4
AiP_08	zapisuje wybrane algorytmy klasyczne w postaci iteracyjnej lub/oraz rekurencyjnej	KN_I_U03 KN_I_U04	5 5
AiP_09	porównuje działanie różnych algorytmów dla wybranego problemu, analizuje algorytmy na podstawie ich gotowych implementacji	KN_I_U03	4
AiP_10	zna różne metody i techniki programowania: podejście zachłanne, programowanie dynamiczne, programowanie z nawrotami	KN_I_W03	3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom

		anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
AiP_fs_01	lecture	25	exam	AiP_03, AiP_06, AiP_08, AiP_09, AiP_10	a01, c07
AiP_fs_02	discussion classes	15	course work	AiP_01, AiP_02, AiP_03, AiP_04, AiP_05, AiP_06, AiP_07, AiP_08, AiP_09, AiP_10	b08, b09, d03, f02
AiP_fs_03	laboratory classes	20	course work	AiP_01, AiP_02, AiP_03, AiP_04, AiP_05, AiP_06, AiP_07, AiP_08, AiP_09, AiP_10	b08, b09, d01, e01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No

a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	Field of study	Mathematics
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	General information about the module
Module name	**Assessment and diagnosis in primary education**
Module code	W4-MT-S1-25-OiDwSP
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Moduł obejmuje treści dotyczące diagnostyki edukacyjnej jako narzędzia umożliwiającego rozpoznawanie jakości procesu kształcenia. Należą do nich między innymi: Ocenianie ucznia: ocenianie jako proces wspierania jego edukacyjnego rozwoju konstruowanie narzędzi przydatnych w procesie oceniania uczniów, ocenianie kształtujące a efektywność nauczania. Ewaluacja: ocena jakości pracy nauczyciela. ocena jakości pracy szkoły (placówki oświatowej) –wymierne i niewymierne efekty edukacyjne. ewaluacja edukacyjna. edukacyjna wartość dodana. autoewaluacja, projektowanie ścieżki własnego rozwoju (samokształcenie zawodowe, samodoskonalenie). Diagnoza wstępna grupy uczniowskiej i każdego ucznia.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
OiDwSP_01	Student zna i rozumie rolę diagnozy, kontroli i oceniania w pracy dydaktycznej; ocenianie i jego rodzaje: ocenianie bieżące, semestralne i roczne, ocenianie wewnętrzne i zewnętrzne; funkcje oceny.	KN.2023_W02 KN.2023_W07 KN.2023_W09	4 4 4
OiDwSP_02	Student zna i rozumie egzaminy kończące etap edukacyjny i sposoby konstruowania testów, sprawdzianów oraz innych narzędzi przydatnych w procesie oceniania uczniów w ramach nauczanego przedmiotu.	KN.2023_W02 KN.2023_W07	4 4
OiDwSP_03	Student zna i rozumie diagnozę wstępną grupy uczniowskiej i każdego ucznia w kontekście nauczanego przedmiotu lub prowadzonych zajęć oraz sposoby wspomagania rozwoju poznawczego uczniów.	KN.2023_W02 KN.2023_W04 KN.2023_W07 KN.2023_W14	4 4 4 4
OiDwSP_04	Student potrafi merytorycznie, profesjonalnie i rzetelnie oceniać pracę uczniów wykonywaną w klasie i w domu.	KN.2023_U10	4
OiDwSP_05	Student potrafi skonstruować sprawdzian służący ocenie danych umiejętności uczniów.	KN.2023_U10	4

		KN.2023_U11	4
OiDwSP_06	Student potrafi przeprowadzić wstępną diagnozę umiejętności ucznia.	KN.2023_U10 KN.2023_U11	4 4
OiDwSP_07	Student jest gotów do popularyzowania wiedzy wśród uczniów i w środowisku szkolnym oraz pozaszkolnym.	KN.2023_KS02 KN.2023_KS03 KN.2023_KS04	2 2 2

9. Methods of conducting classes

Code	Category	Name (description)
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
OiDwSP_01	discussion classes	15	course work	OiDwSP_01, OiDwSP_02, OiDwSP_03, OiDwSP_04, OiDwSP_05, OiDwSP_06, OiDwSP_07	b02, b04

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Combinatorics**
Module code	W4-MT-S1-25-KRPr
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest nabycie wiedzy z zakresu matematyki dyskretnej (kombinatoryki) oraz nabycie umiejętności rozróżniania poszczególnych obiektów kombinatorycznych, a także stosowania ich do rozwiązywania konkretnych problemów kombinatorycznych. W ramach modułu planowane jest omówienie treści z zakresu: Metody przeliczania: prawo mnożenia, prawo dodawania, metoda bijektywna. Schematy wyboru: permutacje, kombinacje, wariacje, podziały zbioru, podziały liczb. Liczby Fibonacciego, Catalana, Stirlinga. Współczynniki dwumianowe i ich własności. Dwumian Newtona. Zasada szufladkowa Dirichleta, reguła włączania i wyłączania i zasada podziałowa. Rekurencja, funkcje tworzące. Elementy teorii grafów.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
Kom_1	student zna definicje głównych obiektów kombinatorycznych i ich własności	K_W04	3
Kom_2	student zna i potrafi rozpoznawać obiekty kombinatoryczne w różnych zagadnieniach matematycznych i praktycznych	K_U10 K_W01 K_W04	5 3 4
Kom_3	student potrafi łączyć różne schematy losowania z odpowiednimi obiektami kombinatorycznymi	K_U10	5
Kom_4	student zna i potrafi stosować poznane metody zliczania	K_U10 K_W04	5 3
Kom_5	student potrafi rozwiązywać równania rekurencyjne	K_U10	5

Kom_6	student główne pojęcia i fakty teorii grafów	K_W01 K_W04	2 3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
Kom_fs_1	lecture	15	course work	Kom_1, Kom_2, Kom_3, Kom_4, Kom_5, Kom_6	a01
Kom_fs_2	discussion classes	15	course work	Kom_2, Kom_3, Kom_4, Kom_5	b08, e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Computer tools for mathematics**
Module code	W4-MT-S1-25-INM
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem kursu jest zapoznanie studentów z wybranymi narzędziami informatycznymi istotnymi z punktu widzenia zawodu matematyka. W ramach kursu studenci zapoznają się z wybranym(i) systemem/systemami do prowadzenia obliczeń symbolicznych i numerycznych oraz wybranym pakietem statystycznym.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
INM_1	Student zna wybrane narzędzia informatyczne istotne z punktu widzenia zawodu matematyka, w szczególności wybrany systemem do prowadzenia obliczeń symbolicznych i numerycznych oraz wybrany pakiet statystyczny.	K_W06	3
INM_2	Student potrafi wprowadzać i przekształcać wyrażenia symboliczne za pomocą wybranego programu matematycznego.	K_U07	2
INM_3	Student potrafi wykonywać działania numeryczne na liczbach zmiennoprzecinkowych i obiektach złożonych z liczb zmiennoprzecinkowych (np. wektory, macierze) z użyciem wybranego programu matematycznego.	K_U07	2
INM_4	Student potrafi wprowadzać dane i wykonywać na nich operacje statystyczne za pomocą wybranego pakietu statystycznego.	K_U07 K_U12	2 2
INM_5	Student potrafi wykorzystać wybrany program obliczeniowy do rozwiązywania standardowych problemów z zakresu analizy matematycznej i algebry (w tym w szczególności algebry liniowej).	K_U03 K_U04 K_U07	1 1 3
INM_6	Student potrafi programować w języku wybranego pakietu matematycznego.	K_U07 K_U08 K_U09	1 2 1

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
INM_fs_01	laboratory classes	30	course work	INM_1, INM_2, INM_3, INM_4, INM_5, INM_6	d01, e01, e02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Continuous Education Practicium from Chemistry in Primary School**
Module code	W4-MT-S1-24-PNCCh
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem praktyki nauczycielskiej jest zdobywanie przez studenta doświadczenia związanego z pracą dydaktyczno-wychowawczą nauczyciela i konfrontowanie nabytej wiedzy z zakresu dydaktyki chemii z rzeczywistością pedagogiczną. Ramowy program praktyk zakłada: 1. Przedstawienie studentowi zadań i obowiązków związanych z praktyką. 2. Zapoznanie się ze specyfiką szkoły. 3. Zapoznanie się z pracą nauczyciela przedmiotu. 4. Obserwacja zajęć przedmiotowych. 5. Prowadzenie zajęć przez studenta i analiza ich przebiegu. 6. Zapoznanie się z pracą pedagoga szkolnego i ewentualnie psychologa szkolnego. 7. Zapoznanie się z pracą wychowawcy. 8. W miarę możliwości obserwacja spotkań rady pedagogicznej. 9. Uczestnictwo w pozalekcyjnych działaniach opiekuńczo-wychowawczych nauczycieli, w tym dyżurach na przerwach, zorganizowanych wyjściach grup uczniowskich. 10. Praca indywidualna z uczniami. 11. Podsumowanie praktyk.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-24-PNCh1] Education Practicium from Chemistry in Primary School, Tutoring I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNCCh_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	4
PNCCh_02	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania	KN.2023_U01 KN.2023_U03	5 4

	pracy domowej	KN.2023_U10	5
PNCCh_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08	5 5 5
PNCCh_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych oraz nauczycieli akademickich prowadzących zajęcia w zakresie przygotowania psychologiczno- pedagogicznego, sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	4 4
PNCCh_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS02 KN.2023_KS07	3 4

9. Methods of conducting classes

Code	Category	Name (description)
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PNCCh_fs_01	internship	15	course work	PNCCh_01, PNCCh_02, PNCCh_03, PNCCh_04, PNCCh_05	e05

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
d03	Consulting the results of the verification of learning outcomes	Review of internship documentation *an analysis of the portfolio of documentation obtained during internship, including professional internship, and other practical classes and studio sessions, as well as the documentation developed in order to obtain credit for such classes; verification of the description, necessary attachments, opinions and grades before submitting the portfolio for acceptance*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Continuous Education Practicium from Computer Science in Primary School**
Module code	W4-MT-S1-24-PNCInf
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem praktyki nauczycielskiej jest zdobywanie przez studenta doświadczenia związanego z pracą dydaktyczno-wychowawczą nauczyciela i konfrontowanie nabytej wiedzy z zakresu dydaktyki informatyki z rzeczywistością pedagogiczną. Ramowy program praktyk zakłada: 1. Przedstawienie studentowi zadań i obowiązków związanych z praktyką. 2. Zapoznanie się ze specyfiką szkoły. 3. Zapoznanie się z pracą nauczyciela przedmiotu. 4. Obserwacja zajęć przedmiotowych. 5. Prowadzenie zajęć przez studenta i analiza ich przebiegu. 6. Zapoznanie się z pracą pedagoga szkolnego i ewentualnie psychologa szkolnego. 7. Zapoznanie się z pracą wychowawcy. 8. W miarę możliwości obserwacja spotkań rady pedagogicznej. 9. Uczestnictwo w pozalekcyjnych działaniach opiekuńczo-wychowawczych nauczycieli, w tym dyżurach na przerwach, zorganizowanych wyjściach grup uczniowskich. 10. Praca indywidualna z uczniami. 11. Podsumowanie praktyk.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-24-PNInf1] Education Practicium from Computer Science in Primary School, Tutoring I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNCInf_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	4
PNCInf_02	atudent potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania	KN.2023_U01 KN.2023_U03	5 4

	pracy domowej	KN.2023_U10	5
PNCInf_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08	5 5 5
PNCInf_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych oraz nauczycieli akademickich prowadzących zajęcia w zakresie przygotowania psychologiczno- -pedagogicznego, sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	4 4
PNCInf_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS02 KN.2023_KS07	3 4

9. Methods of conducting classes

Code	Category	Name (description)
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PNCInf_fs_01	internship	15	course work	PNCInf_01, PNCInf_02, PNCInf_03, PNCInf_04, PNCInf_05	e05

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
d03	Consulting the results of the verification of learning outcomes	Review of internship documentation *an analysis of the portfolio of documentation obtained during internship, including professional internship, and other practical classes and studio sessions, as well as the documentation developed in order to obtain credit for such classes; verification of the description, necessary attachments, opinions and grades before submitting the portfolio for acceptance*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Continuous Education Practicium from Mathematics in Primary School**
Module code	W4-MT-S1-25-PNCMat
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem praktyki nauczycielskiej jest zdobywanie przez studenta doświadczenia związanego z pracą dydaktyczno-wychowawczą nauczyciela i konfrontowanie nabytej wiedzy z zakresu dydaktyki matematyki z rzeczywistością pedagogiczną. Ramowy program praktyk zakłada: 1. Przedstawienie studentowi zadań i obowiązków związanych z praktyką. 2. Zapoznanie się ze specyfiką szkoły. 3. Zapoznanie się z pracą nauczyciela przedmiotu. 4. Obserwacja zajęć przedmiotowych. 5. Prowadzenie zajęć przez studenta i analiza ich przebiegu. 6. Zapoznanie się z pracą pedagoga szkolnego i ewentualnie psychologa szkolnego. 7. Zapoznanie się z pracą wychowawcy. 8. W miarę możliwości obserwacja spotkań rady pedagogicznej. 9. Uczestnictwo w pozalekcyjnych działaniach opiekuńczo-wychowawczych nauczycieli, w tym dyżurach na przerwach, zorganizowanych wyjściach grup uczniowskich. 10. Praca indywidualna z uczniami. 11. Podsumowanie praktyk.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-PNMa1] Education Practicium from Mathematics in Primary School I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNCMat_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę lub placówkę systemu oświaty	KN.2023_W01 KN.2023_W06 KN.2023_W09	3 4 3
PNCMat_02	student zna i rozumie sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły lub placówki systemu oświaty	KN.2023_W06 KN.2023_W08	4 3

		KN.2023_W11	3
PNCMat_03	student zna rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole lub placówce systemu oświaty	KN.2023_W06 KN.2023_W08 KN.2023_W09	4 3 3
PNCMat_04	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U02 KN.2023_U03 KN.2023_U07 KN.2023_U10	4 4 4 4 4
PNCMat_05	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08 KN_I_U07	4 4 4 4
PNCMat_06	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych oraz nauczycieli akademickich prowadzących zajęcia w zakresie przygotowania psychologiczno-pedagogicznego, sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	2 4
PNCMat_07	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07 KN_I_K02	4 4

9. Methods of conducting classes

Code	Category	Name (description)
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	internship	40	course work	PNCMat_01, PNCMat_02, PNCMat_03, PNCMat_04,	e05, e06, f01

				PNCMat_05, PNCMat_06, PNCMat_07	

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
d03	Consulting the results of the verification of learning outcomes	Review of internship documentation *an analysis of the portfolio of documentation obtained during internship, including professional internship, and other practical classes and studio sessions, as well as the documentation developed in order to obtain credit for such classes; verification of the description, necessary attachments, opinions and grades before submitting the portfolio for acceptance*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Continuous Education Practicium from Physics in Primary School**
Module code	KN-F-PCF
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem praktyki nauczycielskiej jest zdobywanie przez studenta doświadczenia związanego z pracą dydaktyczno-wychowawczą nauczyciela i konfrontowanie nabytej wiedzy z zakresu dydaktyki fizyki z rzeczywistością pedagogiczną. Ramowy program praktyk zakłada: 1. Przedstawienie studentowi zadań i obowiązków związanych z praktyką. 2. Zapoznanie się ze specyfiką szkoły. 3. Zapoznanie się z pracą nauczyciela przedmiotu. 4. Obserwacja zajęć przedmiotowych. 5. Prowadzenie zajęć przez studenta i analiza ich przebiegu. 6. Zapoznanie się z pracą pedagoga szkolnego i ewentualnie psychologa szkolnego. 7. Zapoznanie się z pracą wychowawcy. 8. W miarę możliwości obserwacja spotkań rady pedagogicznej. 9. Uczestnictwo w pozalekcyjnych działaniach opiekuńczo-wychowawczych nauczycieli, w tym dyżurach na przerwach, zorganizowanych wyjściach grup uczniowskich. 10. Praca indywidualna z uczniami. 11. Podsumowanie praktyk.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNCFiz_01	zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	4
PNCFiz_02	potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U10	5 5

PNCFiz_03	potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08	5 5 5
PNCFiz_04	potrafi analizować, przy pomocy opiekuna praktyk zawodowych oraz nauczycieli akademickich prowadzących zajęcia w zakresie przygotowania psychologiczno- -pedagogicznego, sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	4 4
PNCFiz_05	jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07	4

9. Methods of conducting classes

Code	Category	Name (description)
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PNCFiz_fs_01	internship	15	course work	PNCFiz_01, PNCFiz_02, PNCFiz_03, PNCFiz_04, PNCFiz_05	e05, e06, f01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	No
d03	Consulting the results of the verification of learning outcomes	Review of internship documentation *an analysis of the portfolio of documentation obtained during internship, including professional internship, and other practical classes and studio sessions, as well as the documentation developed in order to obtain credit for such classes; verification of the description, necessary attachments, opinions and grades before submitting the portfolio for acceptance*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Didactics of Chemistry I**
Module code	W4-MT-S1-25-DCh1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - chemia) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela na drugim etapie edukacyjnym. W ramach modułu Dydaktyka chemii I - szkoła podstawowa przewiduje się zapoznanie studentów z: - podstawowymi dokumentami regulującymi przebieg procesu kształcenia informatycznego uczniów szkoły podstawowej (podstawa programowa z chemii, program nauczania, rozkład materiału, ramowy plan nauczania), - metodyką realizacji poszczególnych treści kształcenia w obrębie chemii w zakresie programów dla szkoły podstawowej, - metodami nauczania właściwymi dla chemii, - niekonwencjonalnymi metodami nauczania chemii, - rolą błędu w nauczaniu chemii i sposobami jego wykorzystania w procesie dydaktycznym, - organizacją pracy w klasie szkolnej i grupach, - sposobami organizowania przestrzeni klasy szkolnej, - współpracą nauczyciela z rodzicami.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DCh1_01	student zna i rozumie miejsce chemii w ramowych planach nauczania na etapie szkoły podstawowej	KN.2023_W08 KN.2023_W09	3 3
DCh1_02	student zna i rozumie podstawę programową z chemii, cele kształcenia i treści nauczania. Zna strukturę wiedzy oraz kompetencje kluczowe i ich kształtowanie w ramach nauczania chemii, a także realizację treści chemii w kontekście wcześniejszego i dalszego kształcenia	KN.2023_W08 KN.2023_W09	3 3
DCh1_03	student zna i rozumie integrację wewnątrz - i międzyprzedmiotową; zagadnienia związane z programem nauczania – tworzenie i modyfikację, analizę, ocenę, dobór i zatwierdzanie oraz zasady projektowania procesu kształcenia oraz	KN.2023_W02 KN.2023_W04	2 2

	rozkładu materiału.		
DCh1_04	student zna i rozumie konwencjonalne i niekonwencjonalne metody nauczania, w tym metody aktywizujące i metodę projektów, proces uczenia się przez działanie, odkrywanie lub dociekanie naukowe oraz pracę badawczą ucznia, a także zasady doboru metod nauczania typowych dla chemii	KN.2023_W02 KN.2023_W04 KN.2023_W06 KN.2023_W15	4 4 4 3
DCh1_05	student zna i rozumie metodykę realizacji poszczególnych treści kształcenia w obrębie chemii – rozwiązania merytoryczne i metodyczne, dobre praktyki, dostosowanie oddziaływań do potrzeb i możliwości uczniów lub grup uczniowskich o różnym potencjale i stylu uczenia się, typowe dla chemii błędy uczniowskie, ich rolę i sposoby wykorzystania w procesie dydaktycznym.	KN.2023_W02 KN.2023_W14 KN.2023_W15	2 2 2
DCh1_06	student zna i rozumie metody kształcenia w odniesieniu do chemii, a także znaczenie kształtowania postawy odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej.	KN.2023_W02 KN.2023_W14 KN.2023_W15	4 2 4
DCh1_07	student zna i rozumie kompetencje merytoryczne, dydaktyczne i wychowawcze nauczyciela, w tym dostosowywania sposobu komunikowania się do poziomu rozwoju uczniów i stymulowania aktywności poznawczej uczniów; zna rolę nauczyciela jako popularyzatora wiedzy oraz znaczenie współpracy nauczyciela w procesie dydaktycznym z rodzicami lub opiekunami uczniów, pracownikami szkoły i środowiskiem pozaszkolnym	KN.2023_W03	4
DCh1_08	student zna i rozumie organizację pracy w klasie szkolnej i grupach: potrzebę indywidualizacji nauczania, zagadnienie nauczania interdyscyplinarnego, formy pracy specyficzne dla chemii: wycieczki, zajęcia terenowe i laboratoryjne, doświadczenia i konkursy oraz zagadnienia związane z pracą domową	KN.2023_W02 KN.2023_W04 KN.2023_W05 KN.2023_W06 KN.2023_W15	2 2 2 3 4
DCh1_09	student zna i rozumie sposoby organizowania przestrzeni klasy szkolnej: środki dydaktyczne (podręczniki i pakiety edukacyjne), pomoce dydaktyczne – dobór i wykorzystanie zasobów edukacyjnych, edukacyjne zastosowania mediów i technologii informacyjno-komunikacyjnej; myślenie komputacyjne w rozwiązywaniu problemów w zakresie chemii	KN.2023_W04 KN.2023_W15	3 4
DCh1_10	student potrafi identyfikować typowe zadania szkolne z celami kształcenia, w szczególności z wymaganiami ogólnymi podstawy programowej, oraz z kompetencjami kluczowymi	KN.2023_U02 KN.2023_U07	3 3
DCh1_11	student potrafi przeanalizować rozkład materiału	KN.2023_U02	4
DCh1_12	student potrafi identyfikować powiązania treści chemii z innymi treściami nauczania.	KN.2023_U03 KN.2023_U07	2 3
DCh1_13	student potrafi dostosować sposób komunikacji do poziomu rozwojowego uczniów.	KN.2023_U03 KN.2023_U15	3 4
DCh1_14	student potrafi kreować sytuacje dydaktyczne służące aktywności i rozwojowi zainteresowań uczniów oraz popularyzacji wiedzy	KN.2023_U03 KN.2023_U06 KN.2023_U07	4 4 4
DCh1_15	student potrafi podejmować skuteczną współpracę w procesie dydaktycznym z rodzicami lub opiekunami uczniów, pracownikami szkoły i środowiskiem pozaszkolnym	KN.2023_U05	4

DCh1_16	student potrafi dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne	KN.2023_U02 KN.2023_U03 KN.2023_U12	4 4 1
DCh1_17	student potrafi rozpoznać typowe dla chemii błędy uczniowskie i wykorzystać je w procesie dydaktycznym	KN.2023_U03	3
DCh1_18	student jest gotów do adaptowania metod pracy do potrzeb i różnych stylów uczenia się uczniów	KN.2023_KS02 KN.2023_KS04	2 2
DCh1_19	student jest gotów popularyzowania wiedzy wśród uczniów i w środowisku szkolnym oraz pozaszkolnym	KN.2023_KS02	3
DCh1_20	student jest gotów promowania odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej	KN.2023_KS01 KN.2023_KS06	4 2
DCh1_21	student jest gotów do kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów	KN.2023_KS03 KN.2023_KS04	3 2

9. Methods of conducting classes

Code	Category	Name (description)
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
DCh1_fs_1	lecture	30	course work	DCh1_01, DCh1_02, DCh1_03, DCh1_04, DCh1_05, DCh1_06, DCh1_07, DCh1_08, DCh1_09, DCh1_18, DCh1_19, DCh1_20, DCh1_21	b02, c07, f01
DCh1_fs_2	workshop	15	course work	DCh1_10, DCh1_11, DCh1_12, DCh1_13, DCh1_14, DCh1_15, DCh1_16, DCh1_17, DCh1_18, DCh1_19, DCh1_20, DCh1_21	b04, e01, e02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Didactics of Chemistry II**
Module code	W4-MT-S1-25-DCh2
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - informatyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela na drugim etapie edukacyjnym. W ramach modułu Dydaktyka chemii II - szkoła podstawowa przewiduje się realizację następujących zagadnień: - diagnoza, ocena, kontrola postępów uczniów, - rozwijanie u uczniów zdolności poznawczych i społeczno-emocjonalnych, - kształtowanie systemu wartości uczniów, - warsztat pracy nauczyciela.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-DCh1] Didactics of Chemistry I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DCh2_01	student zna i rozumie rolę diagnozy, kontroli i oceniania w pracy dydaktycznej; ocenianie i jego rodzaje: ocenianie bieżące, semestralne i roczne, ocenianie wewnętrzne i zewnętrzne; funkcje oceny	KN.2023_W02 KN.2023_W04 KN.2023_W07 KN.2023_W15	3 3 4 4
DCh2_02	student zna i rozumie sposoby konstruowania testów, sprawdzianów oraz innych narzędzi przydatnych w procesie oceniania uczniów w ramach chemii	KN.2023_W02 KN.2023_W07	3 3
DCh2_03	student zna i rozumie diagnozę wstępną grupy uczniowskiej i każdego ucznia w kontekście chemii oraz sposoby wspomagania rozwoju poznawczego uczniów; potrzebę kształtowania pojęć, postaw, umiejętności praktycznych, w tym rozwiązywania problemów, i wykorzystywania wiedzy; metody i techniki skutecznego uczenia się; metody strukturyzacji wiedzy oraz konieczność powtarzania i utrwalania wiedzy i umiejętności	KN.2023_W02 KN.2023_W04 KN.2023_W07	2 2 4
DCh2_04	student zna i rozumie znaczenie rozwijania umiejętności osobistych i społeczno-emocjonalnych uczniów: potrzebę	KN.2023_W01	2

	kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów oraz budowania systemu wartości i rozwijania postaw etycznych uczniów, a także kształtowania kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_W02 KN.2023_W12	2 3
DCh2_05	student zna i rozumie warsztat pracy nauczyciela, właściwe wykorzystanie czasu lekcji przez ucznia i nauczyciela; zagadnienia związane ze sprawdzaniem i ocenianiem jakości kształcenia oraz jej ewaluacją, a także z koniecznością analizy i oceny własnej pracy dydaktyczno-wychowawczej	KN.2023_W03	3
DCh2_06	student zna i rozumie potrzebę kształtowania u ucznia pozytywnego stosunku do nauki, rozwijania ciekawości, aktywności i samodzielności poznawczej, logicznego i krytycznego myślenia, kształtowania motywacji do uczenia się chemii i nawyków systematycznego uczenia się, korzystania z różnych źródeł wiedzy, w tym z Internetu	KN.2023_W03	4
DCh2_07	student potrafi merytorycznie, profesjonalnie i rzetelnie oceniać pracę uczniów wykonywaną w klasie i w domu	KN.2023_U03 KN.2023_U10	4 4
DCh2_08	student potrafi skonstruować sprawdzian służący ocenie danych umiejętności uczniów	KN.2023_U10 KN.2023_U11	5 4
DCh2_09	student potrafi przeprowadzić wstępną diagnozę umiejętności ucznia	KN.2023_U03 KN.2023_U11	4 4
DCh2_10	student jest gotów do rozwijania u uczniów ciekawości, aktywności i samodzielności poznawczej oraz logicznego i krytycznego myślenia	KN.2023_KS04	3
DCh2_11	student jest gotów do kształtowania nawyku systematycznego uczenia się i korzystania z różnych źródeł wiedzy, w tym z Internetu	KN.2023_KS04	3
DCh2_12	student jest gotów do stymulowania uczniów do uczenia się przez całe życie przez samodzielną pracę	KN.2023_KS04	3
DCh2_13	student jest gotów do budowania systemu wartości i rozwijania postaw etycznych uczniów oraz kształtowania ich kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_KS01 KN.2023_KS03	4 3
DCh2_14	student jest gotów do zachęcania uczniów do podejmowania prób badawczych	KN.2023_KS02 KN.2023_KS04	3 2

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
e01	Practical methods	Laboratory exercise / experiment

		[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
DCh2_fs_01	workshop	15	course work	DCh2_01, DCh2_02, DCh2_03, DCh2_04, DCh2_05, DCh2_06, DCh2_07, DCh2_08, DCh2_09, DCh2_10, DCh2_11, DCh2_12, DCh2_13, DCh2_14	b04, c07, e01, e02, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Didactics of Computer Science I**
Module code	W4-MT-S1-25-DInf1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - informatyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela na drugim etapie edukacyjnym. W ramach modułu Dydaktyka informatyki I - szkoła podstawowa przewiduje się zapoznanie studentów z: - podstawowymi dokumentami regulującymi przebieg procesu kształcenia informatycznego uczniów szkoły podstawowej (podstawa programowa z informatyki, program nauczania, rozkład materiału, ramowy plan nauczania), - metodyką realizacji poszczególnych treści kształcenia w obrębie informatyki w zakresie programów dla szkoły podstawowej, - metodami nauczania właściwymi dla informatyki, - niekonwencjonalnymi metodami nauczania informatyki, - rolą błędu w nauczaniu informatyki i sposobami jego wykorzystania w procesie dydaktycznym, - organizacją pracy w klasie szkolnej i grupach, - sposobami organizowania przestrzeni klasy szkolnej, - współpracą nauczyciela z rodzicami.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DInf1_01	student zna i rozumie miejsce informatyki w ramowych planach nauczania na etapie szkoły podstawowej	KN.2023_W08 KN.2023_W09	3 3
DInf1_02	student zna i rozumie podstawę programową z informatyki, cele kształcenia i treści nauczania; zna strukturę wiedzy oraz kompetencje kluczowe i ich kształtowanie w ramach nauczania informatyki, a także realizację treści informatyki w kontekście wcześniejszego i dalszego kształcenia	KN.2023_W08 KN.2023_W09	3 3
DInf1_03	student zna i rozumie integrację wewnątrz- i międzyprzedmiotową; zagadnienia związane z programem nauczania – tworzenie i modyfikację, analizę, ocenę, dobór i zatwierdzanie oraz zasady projektowania procesu kształcenia oraz	KN.2023_W02 KN.2023_W04	2 2

	rozkładu materiału.		
DInf1_04	student zna i rozumie konwencjonalne i niekonwencjonalne metody nauczania, w tym metody aktywizujące i metodę projektów, proces uczenia się przez działanie, odkrywanie lub dociekanie naukowe oraz pracę badawczą ucznia, a także zasady doboru metod nauczania typowych dla informatyki	KN.2023_W02 KN.2023_W04 KN.2023_W06 KN.2023_W15	4 4 4 3
DInf1_05	student zna i rozumie metodykę realizacji poszczególnych treści kształcenia w obrębie informatyki – rozwiązania merytoryczne i metodyczne, dobre praktyki, dostosowanie oddziaływań do potrzeb i możliwości uczniów lub grup uczniowskich o różnym potencjale i stylu uczenia się, typowe dla informatyki błędy uczniowskie, ich rolę i sposoby wykorzystania w procesie dydaktycznym.	KN.2023_W02 KN.2023_W14 KN.2023_W15	2 2 2
DInf1_06	student zna i rozumie metody kształcenia w odniesieniu do informatyki, a także znaczenie kształtowania postawy odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej.	KN.2023_W02 KN.2023_W14 KN.2023_W15	4 2 4
DInf1_07	student zna i rozumie kompetencje merytoryczne, dydaktyczne i wychowawcze nauczyciela, w tym dostosowywania sposobu komunikowania się do poziomu rozwoju uczniów i stymulowania aktywności poznawczej uczniów; zna rolę nauczyciela jako popularyzatora wiedzy oraz znaczenie współpracy nauczyciela w procesie dydaktycznym z rodzicami lub opiekunami uczniów, pracownikami szkoły i środowiskiem pozaszkolnym	KN.2023_W03	4
DInf1_08	student zna i rozumie organizację pracy w klasie szkolnej i grupach: potrzebę indywidualizacji nauczania, zagadnienie nauczania interdyscyplinarnego, formy pracy specyficzne dla informatyki: wycieczki, zajęcia terenowe i laboratoryjne, doświadczenia i konkursy oraz zagadnienia związane z pracą domową	KN.2023_W02 KN.2023_W04 KN.2023_W05 KN.2023_W06 KN.2023_W15	2 2 2 3 4
DInf1_09	student zna i rozumie sposoby organizowania przestrzeni klasy szkolnej: środki dydaktyczne (podręczniki i pakiety edukacyjne), pomoce dydaktyczne – dobór i wykorzystanie zasobów edukacyjnych, edukacyjne zastosowania mediów i technologii informacyjno-komunikacyjnej; myślenie komputacyjne w rozwiązywaniu problemów w zakresie informatyki	KN.2023_W04 KN.2023_W15	3 4
DInf1_10	student potrafi identyfikować typowe zadania szkolne z celami kształcenia, w szczególności z wymaganiami ogólnymi podstawy programowej, oraz z kompetencjami kluczowymi	KN.2023_U02 KN.2023_U07	3 3
DInf1_11	student potrafi przeanalizować rozkład materiału	KN.2023_U02	4
DInf1_12	student potrafi identyfikować powiązania treści informatyki z innymi treściami nauczania.	KN.2023_U03 KN.2023_U07	2 3
DInf1_13	student potrafi dostosować sposób komunikacji do poziomu rozwojowego uczniów.	KN.2023_U03 KN.2023_U15	3 4
DInf1_14	student potrafi kreować sytuacje dydaktyczne służące aktywności i rozwojowi zainteresowań uczniów oraz popularyzacji wiedzy	KN.2023_U03 KN.2023_U06 KN.2023_U07	4 4 4
DInf1_15	student potrafi podejmować skuteczną współpracę w procesie dydaktycznym z rodzicami lub opiekunami uczniów, pracownikami szkoły i środowiskiem pozaszkolnym	KN.2023_U05	4

DInf1_16	student potrafi dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne	KN.2023_U02 KN.2023_U03 KN.2023_U12	4 4 1
DInf1_17	student potrafi rozpoznać typowe dla informatyki błędy uczniowskie i wykorzystać je w procesie dydaktycznym	KN.2023_U03	3
DInf1_18	student jest gotów do adaptowania metod pracy do potrzeb i różnych stylów uczenia się uczniów	KN.2023_KS02 KN.2023_KS04	2 2
DInf1_19	student jest gotów popularyzowania wiedzy wśród uczniów i w środowisku szkolnym oraz pozaszkolnym	KN.2023_KS02	3
DInf1_20	student jest gotów promowania odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej	KN.2023_KS01 KN.2023_KS06	4 2
DInf1_21	student jest gotów do kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów	KN.2023_KS03 KN.2023_KS04	3 2

9. Methods of conducting classes

Code	Category	Name (description)
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
DInf1_fs_1	lecture	30	course work	DInf1_01, DInf1_02, DInf1_03, DInf1_04, DInf1_05, DInf1_06, DInf1_07, DInf1_08, DInf1_09, DInf1_18, DInf1_19, DInf1_20, DInf1_21	b02, c07, f01
DInf1_fs_2	workshop	15	course work	DInf1_04, DInf1_10, DInf1_11, DInf1_12, DInf1_13, DInf1_14, DInf1_15, DInf1_16, DInf1_17, DInf1_18, DInf1_19, DInf1_20	b04, b08, e02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Didactics of Computer Science II**
Module code	W4-MT-S1-25-DInf2
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - informatyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela na drugim etapie edukacyjnym. W ramach modułu Dydaktyka informatyki II - szkoła podstawowa przewiduje się realizację następujących zagadnień: - diagnoza, ocena, kontrola postępów uczniów, - rozwijanie u uczniów zdolności poznawczych i społeczno-emocjonalnych, - kształtowanie systemu wartości uczniów, - warsztat pracy nauczyciela.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-DInf1] Didactics of Computer Science I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DInf2_01	student zna i rozumie rolę diagnozy, kontroli i oceniania w pracy dydaktycznej; ocenianie i jego rodzaje: ocenianie bieżące, semestralne i roczne, ocenianie wewnętrzne i zewnętrzne; funkcje oceny	KN.2023_W02 KN.2023_W04 KN.2023_W07 KN.2023_W15	3 3 4 4
DInf2_02	student zna i rozumie sposoby konstruowania testów, sprawdzianów oraz innych narzędzi przydatnych w procesie oceniania uczniów w ramach informatyki	KN.2023_W02 KN.2023_W07	3 3
DInf2_03	student zna i rozumie diagnozę wstępną grupy uczniowskiej i każdego ucznia w kontekście informatyki oraz sposoby wspomagania rozwoju poznawczego uczniów; potrzebę kształtowania pojęć, postaw, umiejętności praktycznych, w tym rozwiązywania problemów, i wykorzystywania wiedzy; metody i techniki skutecznego uczenia się; metody strukturyzacji wiedzy oraz konieczność powtarzania i utrwalania wiedzy i umiejętności	KN.2023_W02 KN.2023_W04 KN.2023_W07	2 2 4
DInf2_04	student zna i rozumie znaczenie rozwijania umiejętności osobistych i społeczno-emocjonalnych uczniów: potrzebę	KN.2023_W01	2

	kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów oraz budowania systemu wartości i rozwijania postaw etycznych uczniów, a także kształtowania kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_W02 KN.2023_W12	2 3
DInf2_05	student zna i rozumie warsztat pracy nauczyciela, właściwe wykorzystanie czasu lekcji przez ucznia i nauczyciela; zagadnienia związane ze sprawdzaniem i ocenianiem jakości kształcenia oraz jej ewaluacją, a także z koniecznością analizy i oceny własnej pracy dydaktyczno-wychowawczej	KN.2023_W03	3
DInf2_06	student zna i rozumie potrzebę kształtowania u ucznia pozytywnego stosunku do nauki, rozwijania ciekawości, aktywności i samodzielności poznawczej, logicznego i krytycznego myślenia, kształtowania motywacji do uczenia się informatyki i nawyków systematycznego uczenia się, korzystania z różnych źródeł wiedzy, w tym z Internetu	KN.2023_W03	4
DInf2_07	student potrafi merytorycznie, profesjonalnie i rzetelnie oceniać pracę uczniów wykonywaną w klasie i w domu	KN.2023_U03 KN.2023_U10	4 4
DInf2_08	student potrafi skonstruować sprawdzian służący ocenie danych umiejętności uczniów	KN.2023_U10 KN.2023_U11	5 4
DInf2_09	student potrafi przeprowadzić wstępną diagnozę umiejętności ucznia	KN.2023_U03 KN.2023_U11	4 4
DInf2_10	student jest gotów do rozwijania u uczniów ciekawości, aktywności i samodzielności poznawczej oraz logicznego i krytycznego myślenia	KN.2023_KS04	3
DInf2_11	student jest gotów do kształtowania nawyku systematycznego uczenia się i korzystania z różnych źródeł wiedzy, w tym z Internetu	KN.2023_KS04	3
DInf2_12	student jest gotów do stymulowania uczniów do uczenia się przez całe życie przez samodzielną pracę	KN.2023_KS04	3
DInf2_13	student jest gotów do budowania systemu wartości i rozwijania postaw etycznych uczniów oraz kształtowania ich kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_KS01 KN.2023_KS03	4 3
DInf2_14	student jest gotów do zachęcania uczniów do podejmowania prób badawczych	KN.2023_KS02 KN.2023_KS04	3 2

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
e02	Practical methods	Production exercise – workshop

		an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
DInf2_fs_01	workshop	15	course work	DInf2_01, DInf2_02, DInf2_03, DInf2_04, DInf2_05, DInf2_06, DInf2_07, DInf2_08, DInf2_09, DInf2_10, DInf2_11, DInf2_12, DInf2_13, DInf2_14	b04, c07, e02, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Didactics of Mathematics I**
Module code	W4-MT-S1-25-DMat1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Dydaktyka matematyki, jako nauka, ogniskuje swoje zainteresowania na szeroko pojętym procesie uczenia się – nauczania matematyki, na jego uwarunkowaniach, przebiegu, regułach, którym podlega oraz na sposobach i możliwości jego kształtowania przez człowieka. Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - matematyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela matematyki w szkole podstawowej. Dydaktyka matematyki I - szkoła podstawowa obejmuje zapoznanie studentów z: - podstawowymi dokumentami regulującymi przebieg procesu kształcenia matematycznego uczniów szkoły podstawowej (podstawa programowa z matematyki, rozkład materiały, ramowy plan nauczania), - metodyką realizacji wybranych treści kształcenia w obrębie matematyki w zakresie programów dla szkoły podstawowej, - metodami nauczania właściwymi dla matematyki.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DMat1_01	student zna i rozumie miejsce matematyki w ramowym planie nauczania na drugim etapie edukacyjnym	KN.2023_W08 KN.2023_W09	1 1
DMat1_02	student zna i rozumie podstawę programową z matematyki dla szkoły podstawowej, cele kształcenia matematycznego na drugim etapie edukacyjnym, przedmiot w kontekście wcześniejszego i dalszego kształcenia, strukturę wiedzy w zakresie matematyki oraz kompetencje kluczowe i ich kształtowanie w ramach nauczania matematyki	KN.2023_W08 KN.2023_W09	1 1
DMat1_03	student zna i rozumie integrację wewnątrz- i międzyprzedmiotową; zagadnienia związane z programem nauczania – tworzenie i modyfikację, analizę, ocenę, dobór i zatwierdzanie oraz zasady projektowania procesu kształcenia oraz rozkładu materiału	KN.2023_W02 KN.2023_W04	2 2
DMat1_04	student zna i rozumie metodykę realizacji poszczególnych treści kształcenia w obrębie matematyki – rozwiązania merytoryczne i metodyczne, dobre praktyki, dostosowanie oddziaływań do potrzeb i możliwości uczniów lub grup	KN.2023_W02 KN.2023_W14	2 2

	uczniowskich o różnym potencjale i stylu uczenia się, typowe dla matematyki błędy uczniowskie, ich rolę i sposoby wykorzystania w procesie dydaktycznym	KN.2023_W15	2
DMat1_05	student zna i rozumie metody kształcenia w odniesieniu do matematyki, a także znaczenie kształtowania postawy odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej	KN.2023_W04 KN.2023_W14 KN.2023_W15	2 2 3
DMat1_06	student potrafi przeanalizować rozkład materiału	KN.2023_U01 KN.2023_U02	2 3
DMat1_07	student potrafi identyfikować powiązania matematyki z innymi treściami nauczania	KN.2023_U03 KN.2023_U07	2 2
DMat1_08	student potrafi dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne	KN.2023_U02 KN.2023_U03 KN.2023_U12 KN.2023_U13	2 2 1 1

9. Methods of conducting classes

Code	Category	Name (description)
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	discussion classes	30	course work	DMat1_01, DMat1_02, DMat1_03, DMat1_04, DMat1_05, DMat1_06, DMat1_07, DMat1_08	a05, b02, b08, c07, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Didactics of Mathematics II**
Module code	W4-MT-S1-25-DMat2
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Dydaktyka matematyki, jako nauka ogniskuje swoje zainteresowania na szeroko pojętym procesie uczenia się – nauczania matematyki, na jego uwarunkowaniach, przebiegu, regułach, którym podlega oraz na sposobach i możliwości jego kształtowania przez człowieka. Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - matematyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela matematyki w szkole podstawowej. Dydaktyka matematyki II - szkoła podstawowa obejmuje zagadnienia związane z: - diagnozą, oceną, kontrolą postępów uczniów, - rozwijaniem u uczniów zdolności poznawczych i społeczno-emocjonalnych, - kształtowaniem systemu wartości uczniów.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-DMat1] Didactics of Mathematics I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DMat2_01	student jest gotów do rozwijania u uczniów ciekawości, aktywności i samodzielności poznawczej oraz logicznego i krytycznego myślenia	KN.2023_KS04	3
DMat2_02	student zna i rozumie znaczenie rozwijania umiejętności osobistych i społeczno-emocjonalnych uczniów: potrzebę kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów oraz budowania systemu wartości i rozwijania postaw etycznych uczniów, a także kształtowania kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_W01 KN.2023_W02 KN.2023_W12	1 2 2
DMat2_03	student zna i rozumie potrzebę kształtowania u ucznia pozytywnego stosunku do nauki, rozwijania ciekawości, aktywności i samodzielności poznawczej, logicznego i krytycznego myślenia, kształtowania motywacji do uczenia się matematyki i nawyków systematycznego uczenia się, korzystania z różnych źródeł wiedzy, w tym z Internetu, oraz przygotowania ucznia do uczenia się przez całe życie przez stymulowanie go do samodzielnej pracy	KN.2023_W03	2
DMat2_04	student potrafi identyfikować typowe zadania szkolne z celami kształcenia, w szczególności z wymaganiami ogólnymi	KN.2023_U02	2

	podstawy programowej, oraz z kompetencjami kluczowymi	KN.2023_U07	3
DMat2_05	student potrafi kreować sytuacje dydaktyczne służące aktywności i rozwojowi zainteresowań uczniów oraz popularyzacji wiedzy	KN.2023_U03 KN.2023_U06 KN.2023_U07	3 2 2
DMat2_06	student jest gotów do budowania systemu wartości i rozwijania postaw etycznych uczniów oraz kształtowania ich kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_KS01 KN.2023_KS03	2 2
DMat2_07	student potrafi przeprowadzić wstępną diagnozę umiejętności ucznia.	KN.2023_U03 KN.2023_U11	2 3
DMat2_08	student jest gotów do promowania odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej.	KN.2023_KS01 KN.2023_KS06	2 2
DMat2_09	student jest gotów do kształtowania nawyku systematycznego uczenia się i korzystania z różnych źródeł wiedzy, w tym z Internetu	KN.2023_KS04	3
DMat2_10	student zna i rozumie rolę diagnozy, kontroli i oceniania w pracy dydaktycznej; ocenianie i jego rodzaje: ocenianie bieżące, semestralne i roczne, ocenianie wewnętrzne i zewnętrzne; funkcje oceny	KN.2023_W02 KN.2023_W04 KN.2023_W07 KN.2023_W15	2 2 3 1
DMat2_11	student zna i rozumie egzaminy kończące etap edukacyjny i sposoby konstruowania testów, sprawdzianów oraz innych narzędzi przydatnych w procesie oceniania uczniów w ramach matematyki	KN.2023_W02 KN.2023_W07	2 3
DMat2_12	student zna i rozumie diagnozę wstępną grupy uczniowskiej i każdego ucznia w kontekście matematyki oraz sposoby wspomagania rozwoju poznawczego uczniów; potrzebę kształtowania pojęć, postaw, umiejętności praktycznych, w tym rozwiązywania problemów, i wykorzystywania wiedzy; metody i techniki skutecznego uczenia się; metody strukturyzacji wiedzy oraz konieczność powtarzania i utrwalania wiedzy i umiejętności	KN.2023_W02 KN.2023_W04 KN.2023_W07	2 3 3
DMat2_13	student potrafi merytorycznie, profesjonalnie i rzetelnie oceniać pracę uczniów wykonywaną w klasie i w domu	KN.2023_U03 KN.2023_U10	3 3
DMat2_14	student potrafi skonstruować sprawdzian służący ocenie danych umiejętności uczniów	KN.2023_U10 KN.2023_U11	2 3

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*

b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	discussion classes	30	course work	DMat2_01, DMat2_02, DMat2_03, DMat2_04, DMat2_05, DMat2_06, DMat2_07, DMat2_08, DMat2_09, DMat2_10, DMat2_11, DMat2_12, DMat2_13, DMat2_14	a03, a05, b02, b08, c06, c07, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source*	No

		materials to be used in class	
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Didactics of Mathematics III**
Module code	W4-MT-S1-25-DMat3
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Dydaktyka matematyki, jako nauka ogniskuje swoje zainteresowania na szeroko pojętym procesie uczenia się – nauczania matematyki, na jego uwarunkowaniach, przebiegu, regułach, którym podlega oraz na sposobach i możliwości jego kształtowania przez człowieka. Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - matematyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela matematyki w szkole podstawowej. Dydaktyka matematyki III - szkoła podstawowa obejmuje zagadnienia takie jak: - niekonwencjonalne metody nauczania matematyki, - formy pracy specyficzne dla matematyki, - rola błędu w nauczaniu matematyki i sposoby jego wykorzystania w procesie dydaktycznym, - metodyka realizacji wybranych treści kształcenia.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-DMat2] Didactics of Mathematics II

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DMat3_01	student zna i rozumie konwencjonalne i niekonwencjonalne metody nauczania, w tym metody aktywizujące i metodę projektów, proces uczenia się przez działanie, odkrywanie lub dociekanie naukowe oraz pracę badawczą ucznia, a także zasady doboru metod nauczania typowych dla matematyki	KN.2023_W02 KN.2023_W04 KN.2023_W06 KN.2023_W15	4 4 3 3
DMat3_02	student zna i rozumie organizację pracy w klasie szkolnej i grupach: potrzebę indywidualizacji nauczania, zagadnienie nauczania interdyscyplinarnego, formy pracy specyficzne dla matematyki: wycieczki, zajęcia terenowe i laboratoryjne, doświadczenia i konkursy oraz zagadnienia związane z pracą domową	KN.2023_W02 KN.2023_W04 KN.2023_W05 KN.2023_W06 KN.2023_W15	2 3 2 3 3

DMat3_03	student zna i rozumie sposoby organizowania przestrzeni klasy szkolnej, z uwzględnieniem zasad projektowania uniwersalnego: środki dydaktyczne (podręczniki i pakiety edukacyjne), pomoce dydaktyczne – dobór i wykorzystanie zasobów edukacyjnych, w tym elektronicznych i obcojęzycznych, edukacyjne zastosowania mediów i technologii informacyjno-komunikacyjnej; myślenie komputacyjne w rozwiązywaniu problemów w zakresie matematyki; potrzebę wyszukiwania, adaptacji i tworzenia elektronicznych zasobów edukacyjnych i projektowania multimediów	KN.2023_W04 KN.2023_W15	3 3
DMat3_04	student zna i rozumie metodykę realizacji poszczególnych treści kształcenia w obrębie matematyki – rozwiązania merytoryczne i metodyczne, dobre praktyki, dostosowanie oddziaływań do potrzeb i możliwości uczniów lub grup uczniowskich o różnym potencjale i stylu uczenia się, typowe dla matematyki lub rodzaju zajęć błędy uczniowskie, ich rolę i sposoby wykorzystania w procesie dydaktycznym	KN.2023_W02 KN.2023_W14 KN.2023_W15	4 4 4
DMat3_05	student jest gotów do adaptowania metod pracy do potrzeb i różnych stylów uczenia się uczniów	KN.2023_KS02 KN.2023_KS04	2 3
DMat3_06	student jest gotów do zachęcania uczniów do podejmowania prób badawczych oraz systematycznej aktywności fizycznej	KN.2023_KS02 KN.2023_KS04	2 3
DMat3_07	student jest gotów do kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów	KN.2023_KS03 KN.2023_KS04	2 3
DMat3_08	student potrafi dostosować sposób komunikacji do poziomu rozwojowego uczniów	KN.2023_U03 KN.2023_U15	3 4

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
d03	Programmed learning methods	Working with another teaching tool

		e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	discussion classes	30	course work	DMat3_01, DMat3_02, DMat3_03, DMat3_04, DMat3_05, DMat3_06, DMat3_07, DMat3_08	a03, a05, b02, b08, c06, d03, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes

c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Diploma Seminar**
Module code	W4-MT-S1-25-SDyp
Number of the ECTS credits	4
Language of instruction	Polish
Purpose and description of the content of education	Seminarium przygotowuje studenta do egzaminu dyplomowego oraz wspomaga realizację końcowej pracy pisemnej na indywidualnie wybrany i uzgodniony z prowadzącym Seminarium temat z „Zakresu merytorycznego egzaminu dyplomowego”. Zajęcia stanowią pomoc w uzyskaniu wiedzy dotyczącej pisania pracy naukowej. Studenci opanowują umiejętności gromadzenia i posługiwania się źródłami naukowymi. Celem Seminarium jest kształtowanie u studentów umiejętności systematycznej pracy nad zadanym projektem, publicznego, ustnego przedstawienia uzyskanych wyników oraz ich prezentacji w formie pisemnej, w formie pracy naukowej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
SDyp_01	rozumie znaczenie założeń i dowodów twierdzeń matematycznych związanych z tematyką pracy końcowej	K_W03	5
SDyp_02	potrafi posługiwać się literaturą w celu przygotowania opracowania dotyczącego tematyki pracy końcowej	K_U16	4
SDyp_03	potrafi uzupełnić brakujące fragmenty dowodów lub też przedstawić własne rozumowania w celu lepszego zrozumienia tematu pracy	K_U14 K_U16	3 5
SDyp_04	rozumie potrzebę formułowania pytań służących pogłębianiu własnej wiedzy związanej z tematyką pracy końcowej	K_U15 K_U16	3 4
SDyp_05	umie przedstawić ustnie, na forum grupy, przygotowane opracowanie związane z tematyką pracy końcowej	K_U01 K_U13	5 5
SDyp_06	potrafi przedstawić pisemne opracowanie wybranego materiału związanego z tematyką pracy końcowej	K_U01 K_U13	5 5
SDyp_07	potrafi zredagować tekst pracy końcowej przy użyciu pakietu LaTeX	K_U07	3
SDyp_08	rozumie potrzebę pogłębiania wiedzy związanej z tematyką pracy końcowej, znając ograniczenia własnej wiedzy w tym	K_K01	5

	zakresie, oraz dostrzega konieczność konsultacji ze specjalistami w przypadku napotkania złożonych problemów matematycznych, oraz jest świadomy znaczenia interdyscyplinarnego podejścia i integrowania wiedzy z różnych dziedzin	K_K05	4
SDyp_09	rozumie konieczność systematycznej pracy nad przygotowaniem pracy końcowej	K_K02	3

9. Methods of conducting classes

Code	Category	Name (description)
b05	Problem-solving methods	Activating method – seminar / proseminar *a seminar method; usually an oral presentation of a previously studied/diagnosed problem delivered on a forum; it aims at provoking a discussion concerning the results of research work; a type of conference, course or training session modelled on seminar classes*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	seminar	30	course work	SDyp_01, SDyp_02, SDyp_03, SDyp_04, SDyp_05, SDyp_06, SDyp_07, SDyp_08, SDyp_09	b05, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning	Yes

		outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Editing mathematical texts**
Module code	W4-MT-S1-24-ETMat
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zapoznanie studentów ze środowiskiem LaTeX, w tym przygotowanie dokumentów zawierających tekst matematyczny, grafikę oraz przygotowanie prezentacji z wykorzystaniem języka LaTeX.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ETMat_01	zna co najmniej jeden edytor tekstowy umożliwiający pracę w środowisku LaTeX oraz główne komendy LaTeX'a	K_W06 K_W07	2 4
ETMat_02	potrafi stworzyć dokument LaTeX o rozbudowanej strukturze, napisać tekst matematyczny, dołączyć grafikę	K_U07	3
ETMat_03	potrafi przygotować prezentację z wykorzystaniem języka LaTeX	K_U07	3

9. Methods of conducting classes

Code	Category	Name (description)
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	laboratory classes	15	course work	ETMat_01, ETMat_02, ETMat_03	d01, e02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Chemistry in Primary School, Tutoring I**
Module code	W4-MT-S1-24-PNCh1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem śródrocznej praktyki dydaktycznej prowadzonej w szkole podstawowej jest gromadzenie doświadczeń związanych z pracą dydaktyczno–wychowawczą nauczyciela na II etapie edukacyjnym (klasy VII - VIII szkoły podstawowej) oraz konfrontowanie nabytej wiedzy z zakresu chemii, dydaktyki ogólnej i dydaktyki chemii z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie podstawowych kompetencji dydaktycznych poprzez: - zapoznanie się ze specyfiką szkoły, w której odbywana jest praktyka dydaktyczna, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych pracowników - uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - współdziałanie z nauczycielem i prowadzącym zajęcia w planowaniu i przeprowadzaniu lekcji chemii; - pełnienie roli nauczyciela, w szczególności planowanie lekcji chemii na II etapie edukacyjnym, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy); - odpowiednie reagowanie na uwagi dotyczące przygotowania oraz prowadzenia lekcji. W module tym przewiduje się również personalizację procesu kształcenia przyszłego nauczyciela chemii budowaną w oparciu o indywidualną opiekę nad studentem (tutoring): - diagnozowanie mocnych i słabych stron studenta jako przyszłego nauczyciela; - wspomaganie studentów w planowaniu i realizacji zadań o charakterze samorozwojowym; - indywidualne doradztwo metodyczne.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-PNMa1] Education Practicium from Mathematics in Primary School I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNCh1_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	2

PNCh1_02	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U03 KN.2023_U10	3 3 3
PNCh1_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08	3 3 3
PNCh1_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	3 3
PNCh1_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07	3

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PNCh1_fs_01	workshop	30	course work	PNCh1_01, PNCh1_02, PNCh1_03, PNCh1_04, PNCh1_05	e05
PNCh1_fs_02	tutoring	2	course work	PNCh1_02, PNCh1_04	b04

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Chemistry in Primary School, Tutoring II**
Module code	W4-MT-S1-24-PNCh2
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem praktyki nauczycielskiej w szkole jest gromadzenie doświadczeń związanych z pracą dydaktyczno – wychowawczą nauczyciela na II etapie edukacyjnym (klasy VII - VIII szkoły podstawowej) i konfrontowanie nabytej wiedzy z zakresu chemii, dydaktyki ogólnej i dydaktyki chemii z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie kompetencji dydaktycznych przez: - dalsze zapoznawanie się ze specyfiką szkół, w których odbywana jest praktyka nauczycielska, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - aktywne współdziałanie z nauczycielem w planowaniu i przeprowadzaniu lekcji (zajęć); - pełnienie roli nauczyciela, w szczególności planowanie lekcji pokazowej z chemii, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy). W module tym przewiduje się również personalizację procesu kształcenia przyszłego nauczyciela chemii i budowaną w oparciu o indywidualną opiekę nad studentem (tutoring): - diagnozowanie mocnych i słabych stron studenta jako przyszłego nauczyciela; - wspomaganie studentów w planowaniu i realizacji zadań o charakterze samorozwojowym; - indywidualne doradztwo metodyczne, wspieranie rozwoju kompetencji studenta, - budowanie profesjonalnego osądu w oparciu o analizy indywidualnych przypadków.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-24-PNCh1] Education Practicium from Chemistry in Primary School, Tutoring I

8.	**Learning outcomes of the module**		
Code	**Description**	**Learning outcomes of the programme**	**Level of competenc (scale 1-5)**
PNCh2_01	student na i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	2

PNCh2_02	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U03 KN.2023_U10	3 4 4
PNCh2_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08	4 4 4
PNCh2_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	4 4
PNCh2_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07	3

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PNCh2_fs_01	workshop	30	course work	PNCh2_01, PNCh2_02, PNCh2_03, PNCh2_04, PNCh2_05	e05
PNCh2_fs_02	tutoring	1	course work	PNCh2_02, PNCh2_04	b04

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Computer Science in Primary School, Tutoring I**
Module code	W4-MT-S1-24-PNInf1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem śródrocznej praktyki dydaktycznej prowadzonej w szkole podstawowej jest gromadzenie doświadczeń związanych z pracą dydaktyczno – wychowawczą nauczyciela na II etapie edukacyjnym (klasy IV - VIII szkoły podstawowej) oraz konfrontowanie nabytej wiedzy z zakresu informatyki, dydaktyki ogólnej i dydaktyki informatyki z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie podstawowych kompetencji dydaktycznych poprzez: - zapoznanie się ze specyfiką szkoły, w której odbywana jest praktyka dydaktyczna, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych pracowników - uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - współdziałanie z nauczycielem i prowadzącym zajęcia w planowaniu i przeprowadzaniu lekcji informatyki; - pełnienie roli nauczyciela, w szczególności planowanie lekcji informatyki na II etapie edukacyjnym, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy); - odpowiednie reagowanie na uwagi dotyczące przygotowania oraz prowadzenia lekcji. W module tym przewiduje się również personalizację procesu kształcenia przyszłego nauczyciela informatyki budowaną w oparciu o indywidualną opiekę nad studentem (tutoring): - diagnozowanie mocnych i słabych stron studenta jako przyszłego nauczyciela; - wspomaganie studentów w planowaniu i realizacji zadań o charakterze samorozwojowym; - indywidualne doradztwo metodyczne.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-PNMa1] Education Practicium from Mathematics in Primary School I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNInf1_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	2

PNInf1_02	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U03 KN.2023_U10	3 3 3
PNInf1_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08	3 3 3
PNInf1_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	3 3
PNInf1_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07	3

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PNInf1_fs_01	workshop	30	course work	PNInf1_01, PNInf1_02, PNInf1_03, PNInf1_04, PNInf1_05	e05
PNInf1_fs_02	tutoring	2	course work	PNInf1_02, PNInf1_04	b04

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Computer Science in Primary School, Tutoring II**
Module code	W4-MT-S1-24-PNInf2
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem praktyki nauczycielskiej w szkole jest gromadzenie doświadczeń związanych z pracą dydaktyczno – wychowawczą nauczyciela na II etapie edukacyjnym i konfrontowanie nabytej wiedzy z zakresu informatyki, dydaktyki ogólnej i dydaktyki informatyki z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie kompetencji dydaktycznych przez: - dalsze zapoznawanie się ze specyfiką szkół, w których odbywana jest praktyka nauczycielska, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - aktywne współdziałanie z nauczycielem w planowaniu i przeprowadzaniu lekcji (zajęć); - pełnienie roli nauczyciela, w szczególności planowanie lekcji pokazowej z chemii, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy). W module tym przewiduje się również personalizację procesu kształcenia przyszłego nauczyciela informatyki i budowaną w oparciu o indywidualną opiekę nad studentem (tutoring): - diagnozowanie mocnych i słabych stron studenta jako przyszłego nauczyciela; - wspomaganie studentów w planowaniu i realizacji zadań o charakterze samorozwojowym; - indywidualne doradztwo metodyczne, wspieranie rozwoju kompetencji studenta, - budowanie profesjonalnego osądu w oparciu o analizy indywidualnych przypadków.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-24-PNInf1] Education Practicium from Computer Science in Primary School, Tutoring I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNInf2_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	5

PNInf2_02	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U03 KN.2023_U10	3 4 4
PNInf2_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08	4 4 4
PNInf2_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	4 4
PNInf2_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07	3

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PNInf2_fs_01	workshop	30	course work	PNInf2_01, PNInf2_02, PNInf2_03, PNInf2_04, PNInf2_05	e05
PNInf2_fs_02	tutoring	1	course work	PNInf2_02, PNInf2_04	b04

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Mathematics in Primary School I**
Module code	W4-MT-S1-25-PNMa1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem śródrocznej praktyki dydaktycznej prowadzonej w szkole podstawowej jest gromadzenie doświadczeń związanych z pracą dydaktyczno – wychowawczą nauczyciela na II etapie edukacyjnym (klasy IV - VIII szkoły podstawowej) oraz konfrontowanie nabytej wiedzy z zakresu matematyki, dydaktyki ogólnej i dydaktyki matematyki z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie podstawowych kompetencji dydaktycznych poprzez: - zapoznanie się ze specyfiką szkoły, w której odbywana jest praktyka dydaktyczna, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych pracowników - uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - współdziałanie z nauczycielem i prowadzącym zajęcia w planowaniu i przeprowadzaniu lekcji matematyki; - pełnienie roli nauczyciela, w szczególności planowanie lekcji matematyki na II etapie edukacyjnym, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy); - odpowiednie reagowanie na uwagi dotyczące przygotowania oraz prowadzenia lekcji.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-PPSTut] Preparation for Work in Primary School

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNMa1_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06 KN.2023_W14 KN.2023_W15	2 2 3
PNMa1_02	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania	KN.2023_U01 KN.2023_U03 KN.2023_U10	3 3 3

	pracy domowej		
PNMa1_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02 KN.2023_U07 KN.2023_U08 KN_I_U07	3 3 3 3
PNMa1_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	3 3
PNMa1_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS02 KN.2023_KS07	3 3

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*

e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e08	Practical methods	Practice-as-research *also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	workshop	60	course work	PNMa1_01, PNMa1_02, PNMa1_03, PNMa1_04, PNMa1_05	b04, b08, c06, c07, d01, d02, d03, e05, e06, e08, f01, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization	Getting acquainted with the syllabus content	No

	of classes	*reading through the syllabus and getting acquainted with its content*	
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Mathematics in Primary School II**
Module code	W4-MT-S1-25-PNMa2
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem śródrocznej praktyki dydaktycznej w szkole jest gromadzenie doświadczeń związanych z pracą dydaktyczno – wychowawczą nauczyciela na II etapie edukacyjnym (klasy IV - VIII szkoły podstawowej) i konfrontowanie nabytej wiedzy z zakresu matematyki, dydaktyki ogólnej i dydaktyki matematyki z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie kompetencji dydaktycznych przez: - dalsze zapoznawanie się ze specyfiką szkół, w których odbywana jest praktyka dydaktyczna, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - aktywne współdziałanie z nauczycielem w planowaniu i przeprowadzaniu lekcji (zajęć); - pełnienie roli nauczyciela, w szczególności planowanie lekcji pokazowej z matematyki, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy).
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-PNMa1] Education Practicium from Mathematics in Primary School I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNMa2_01	student zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06 KN.2023_W14	3 3
PNMa2_02	student potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U03 KN.2023_U10	4 4 4
PNMa2_03	student potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02	4

		KN.2023_U07 KN.2023_U08 KN_I_U07	4 4 4
PNMa2_04	student potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	4 4
PNMa2_05	student jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07 KN_I_K02	3 3

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e05	Practical methods	Internship

		including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e08	Practical methods	Practice-as-research *also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	workshop	60	course work	PNMa2_01, PNMa2_02, PNMa2_03, PNMa2_04, PNMa2_05	b04, b08, c06, c07, d01, d02, d03, e05, e06, e08, f01, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No

b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Physics in Primary School, Tutoring I**
Module code	KN-F-PNF1-TUT
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem śródrocznej praktyki dydaktycznej prowadzonej w szkole podstawowej jest gromadzenie doświadczeń związanych z pracą dydaktyczno–wychowawczą nauczyciela na II etapie edukacyjnym (klasy VII - VIII szkoły podstawowej) oraz konfrontowanie nabytej wiedzy z zakresu fizyki, dydaktyki ogólnej i dydaktyki fizyki z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie podstawowych kompetencji dydaktycznych poprzez: - zapoznanie się ze specyfiką szkoły, w której odbywana jest praktyka dydaktyczna, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych pracowników - uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - współdziałanie z nauczycielem i prowadzącym zajęcia w planowaniu i przeprowadzaniu lekcji fizyki; - pełnienie roli nauczyciela, w szczególności planowanie lekcji fizyki na II etapie edukacyjnym, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy); - odpowiednie reagowanie na uwagi dotyczące przygotowania oraz prowadzenia lekcji. W module tym przewiduje się również personalizację procesu kształcenia przyszłego nauczyciela fizyki budowaną w oparciu o indywidualną opiekę nad studentem (tutoring): - diagnozowanie mocnych i słabych stron studenta jako przyszłego nauczyciela; - wspomaganie studentów w planowaniu i realizacji zadań o charakterze samorozwojowym; - indywidualne doradztwo metodyczne.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNF1_01	zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	2
PNF1_02	potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U10	3 3
PNF1_03	potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02	3

		KN.2023_U07 KN.2023_U08	3 3
PNF1_04	potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	3 3
PNF1_05	jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07	3

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*

d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
e08	Practical methods	Practice-as-research *also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
PNF1_fs_01	workshop	30	course work	PNF1_01, PNF1_02, PNF1_03, PNF1_04, PNF1_05	a03, b04, b08, b09, c02, c06, c07, d01, d02, d03, e05, e06, e07, e08, f01, f02, f03
PNF1_fs_02	tutoring	2	course work	PNF1_02, PNF1_04	a03, b04, c07, d01, d02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes	Yes

		reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes	
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes
d03	Consulting the results of the verification of learning outcomes	Review of internship documentation *an analysis of the portfolio of documentation obtained during internship, including professional internship, and other practical classes and studio sessions, as well as the documentation developed in order to obtain credit for such classes; verification of the description, necessary attachments, opinions and grades before submitting the portfolio for acceptance*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Education Practicium from Physics in Primary School, Tutoring II**
Module code	KN-F-PNF2-TUT
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem praktyki nauczycielskiej w szkole jest gromadzenie doświadczeń związanych z pracą dydaktyczno – wychowawczą nauczyciela na II etapie edukacyjnym (szkoła podstawowa) i konfrontowanie nabytej wiedzy z zakresu fizyki, dydaktyki ogólnej i dydaktyki fizyki z rzeczywistością pedagogiczną w działaniu praktycznym. W trakcie praktyki następuje kształtowanie kompetencji dydaktycznych przez: - dalsze zapoznawanie się ze specyfiką szkół, w których odbywana jest praktyka nauczycielska, w szczególności poznanie realizowanych przez szkołę zadań dydaktycznych, sposobu funkcjonowania, organizacji pracy, różnych uczestników procesów pedagogicznych oraz prowadzonej dokumentacji; - obserwowanie aktywności uczniów oraz wszelkich czynności podejmowanych przez nauczyciela szkoły w toku prowadzonych przez niego lekcji (zajęć); - aktywne współdziałanie z nauczycielem wplanowaniu i przeprowadzaniu lekcji (zajęć); - pełnienie roli nauczyciela, w szczególności planowanie lekcji pokazowej z fizyki, formułowanie celów, dobór metod i form pracy oraz środków dydaktycznych, organizację i prowadzenie lekcji w oparciu o samodzielnie opracowywane scenariusze oraz omawianie zgromadzonych doświadczeń w grupie studentów (słuchaczy). W module tym przewiduje się również personalizację procesu kształcenia przyszłego nauczyciela fizyki i budowaną w oparciu o indywidualną opiekę nad studentem (tutoring): - diagnozowanie mocnych i słabych stron studenta jako przyszłego nauczyciela; - wspomaganie studentów w planowaniu i realizacji zadań o charakterze samorozwojowym; - indywidualne doradztwo metodyczne, wspieranie rozwoju kompetencji studenta, - budowanie profesjonalnego osądu w oparciu o analizy indywidualnych przypadków.
List of modules that must be completed before starting this module (if necessary)	[KN-F-PNF1-TUT] Education Practicium from Physics in Primary School, Tutoring I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PNF2_01	zna i rozumie zadania dydaktyczne realizowane przez szkołę, sposób funkcjonowania oraz organizację pracy dydaktycznej szkoły; rodzaje dokumentacji działalności dydaktycznej prowadzonej w szkole	KN.2023_W06	3
PNF2_02	potrafi wyciągnąć wnioski z obserwacji pracy dydaktycznej nauczyciela, jego interakcji z uczniami oraz sposobu planowania i przeprowadzania zajęć dydaktycznych; aktywnie obserwować stosowane przez nauczyciela metody i formy pracy oraz wykorzystywane pomoce dydaktyczne, a także sposoby oceniania uczniów oraz zadawania i sprawdzania pracy domowej	KN.2023_U01 KN.2023_U10	4 4
PNF2_03	potrafi zaplanować i przeprowadzić pod nadzorem opiekuna praktyk zawodowych serię lekcji lub zajęć	KN.2023_U02	4

		KN.2023_U07 KN.2023_U08	4 4
PNF2_04	potrafi analizować, przy pomocy opiekuna praktyk zawodowych sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk	KN.2023_U02 KN.2023_U13	4 4
PNF2_05	jest gotów do skutecznego współdziałania z opiekunem praktyk zawodowych i nauczycielami w celu poszerzania swojej wiedzy dydaktycznej oraz rozwijania umiejętności wychowawczych	KN.2023_KS07	4

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*

d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
e08	Practical methods	Practice-as-research *also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
PNF2_fs_01	workshop	30	course work	PNF2_01, PNF2_02, PNF2_03, PNF2_04, PNF2_05	a03, b04, b08, b09, c02, c06, c07, d01, d02, e05, e06, e07, e08, f01, f02, f03
PNF2_fs_02	tutoring	1	course work	PNF2_02, PNF2_04	a03, b04, c07, d01, d02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class	No

		exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class	
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes
d03	Consulting the results of the verification of learning outcomes	Review of internship documentation *an analysis of the portfolio of documentation obtained during internship, including professional internship, and other practical classes and studio sessions, as well as the documentation developed in order to obtain credit for such classes; verification of the description, necessary attachments, opinions and grades before submitting the portfolio for acceptance*	Yes
e01	Activities complementary to the classes	Undertaking, on one's own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elementary probability theory**
Module code	W4-MT-S1-25-WzRPr
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Przedmiot ma na celu uzupełnienie wiadomości z zakresu teorii prawdopodobieństwa wyniesionych ze szkoły średniej o wybrane treści bardziej zaawansowane, a także wsparcie realizacji modułu "Rachunek prawdopodobieństwa". W założeniu warsztaty winny zapewnić studentom czas do samodzielnego rozwiązywania zadań rachunkowych i problemowych (z pomocą prowadzącego) oraz wspólnej dyskusji nad zagadnieniami teoretycznymi, którego często brakuje podczas ćwiczeń / konwersatorium do wykładu kursowego. W ramach modułu przewiduje się realizację treści programowych zbieżnych z zakresem tematów realizowanych w ramach modułu "Rachunek prawdopodobieństwa", ze szczególnym uwzględnieniem zagadnień sprawiających studentom największe trudności.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WaRP_1	Buduje przestrzeń probabilistyczną do danego doświadczenia losowego i potrafi wyliczyć prawdopodobieństwa poszczególnych zdarzeń losowych.	K_U01 K_U10 K_U11	4 4 3
WaRP_2	Zna pojęcie prawdopodobieństwa warunkowego, niezależności zdarzeń oraz najważniejsze fakty związane z tymi pojęciami.	K_W02 K_W04 K_W05	1 3 1
WaRP_3	Zna i rozumie pojęcie zmiennej losowej, jej rozkładu prawdopodobieństwa i dystrybuanty, a także zależności między nimi. Podaje przykłady rozkładów dyskretnych i absolutnie ciągłych. Rozumie, czym są wartość oczekiwana i wariancja zmiennej losowej.	K_W01 K_W02 K_W04 K_W05	2 2 4 4
WaRP_4	Potrafi wyznaczać rozkłady brzegowe wektora losowego oraz badać niezależność zmiennych losowych.	K_U01	3

		K_U03 K_U11	4 4
WaRP_5	Wyznacza rozkład sumy niezależnych zmiennych losowych.	K_U01 K_U03 K_U11	3 3 3
WaRP_6	Weryfikuje czy ciąg zmiennych losowych spełnia mocne i/lub słabe prawo wielkich liczb. Stosuje centralne twierdzenie graniczne do szacowania prawdopodobieństw zdarzeń opisanych przez sumy niezależnych zmiennych losowych.	K_U01 K_U03 K_U11	2 2 4

9. Methods of conducting classes

Code	Category	Name (description)
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	discussion classes	15	course work	WaRP_1, WaRP_2, WaRP_3, WaRP_4, WaRP_5, WaRP_6	b01, b02, b04, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No

a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elementary probability theory I**
Module code	W4-MT-S1-25-WzRPr1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Przedmiot ma na celu uzupełnienie wiadomości z zakresu teorii prawdopodobieństwa wyniesionych ze szkoły średniej o wybrane treści bardziej zaawansowane, a także wsparcie realizacji modułu "Wstęp do rachunku prawdopodobieństwa A". W założeniu warsztaty winny zapewnić studentom czas do samodzielnego rozwiązywania zadań rachunkowych i problemowych (z pomocą prowadzącego) oraz wspólnej dyskusji nad zagadnieniami teoretycznymi, którego często brakuje podczas ćwiczeń / konwersatorium do wykładu kursowego. W ramach zajęć realizowane będą tematy wybrane spośród wyszczególnionych poniżej, w zależności od potrzeb studentów. Najwięcej uwagi poświęcone zostanie tym zagadnieniom, których przyswojenie podczas konwersatorium / ćwiczeń ze "Wstępu do rachunku prawdopodobieństwa A" okazało się dla studentów problematyczne. 1. Wybrane schematy kombinatoryczne (kombinacje, wariacje z powtórzeniami i bez powtórzeń, permutacje). 2. Pojęcie σ-ciała, mierzalności funkcji, miary i całki Lebesgue'a względem dowolnej miary oraz fakty z nimi związane. Własności miar probabilistycznych. 3. Prawdopodobieństwo klasyczne i geometryczne. 4. Prawdopodobieństwo warunkowe oraz twierdzenie o prawdopodobieństwie całkowitym i wzór Bayesa. 5. Wzajemna niezależność zdarzeń i rodzin zdarzeń, schemat Bernoulliego, lemat Borela-Cantellego. 6. Zmienne losowe, ich rozkłady prawdopodobieństwa i dystrybuanty. Pojęcie funkcji masy rozkładu dyskretnego i gęstości rozkładu ciągłego. Przykłady najważniejszych rozkładów. 7. Metody wyznaczania rozkładów borelowskich przekształceń zmiennych losowych. 8. Wartość oczekiwana i wariancja zmiennej losowej. Nierówności Markowa, Czebyszewa-Bienayme i Holdera. 9. Wektory losowe, ich rozkłady prawdopodobieństwa i dystrybuanty. Pojęcie funkcji masy rozkładu dyskretnego i gęstości rozkładu ciągłego (w kontekście wielowymiarowym).

	10. Rozkłady brzegowe i metody ich wyznaczania. 11. Niezależność zmiennych losowych oraz jej charakteryzacje w języku dystrybuant, funkcji mas (w przypadku rozkładów dyskretnych) i gęstości (w przypadku rozkładów ciągłych). Nierówność Kołmogorowa. 12. Metody wyznaczania rozkładów borelowskich przekształceń wektorów losowych. W szczególności stosowanie wzorów na gęstość sumy, iloczynu i ilorazu składowych wektora losowego o rozkładzie ciągłym.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WaRP_I_1	Potrafi wykorzystać odpowiednie schematy kombinatoryczne do opisu i rozwiązywania problemów w zakresu kombinatoryki (np. wyznaczania ilości sekwencji elementów spełniających zadane warunki).	K_U09 K_U10	3 4
WaRP_I_10	Potrafi wykorzystywać wiedzę dotyczącą wektorów losowych do budowy i analizy nieskomplikowanych modeli probabilistycznych słownie opisanych doświadczeń losowych.	K_U01 K_U03 K_U11	3 3 5
WaRP_I_11	Potrafi wyznaczyć dystrybuantę wielowymiarowego rozkładu prawdopodobieństwa o danej gęstości / funkcji masy i na odwrót, jak również gęstość / funkcję masy borelowskiego przekształcenia wektora losowego o zadanym rozkładzie wielowymiarowym (ciągłym lub dyskretnym). W szczególności, potrafi stosować wzory na sumę, iloczyn oraz iloraz zmiennych losowych wchodzących w skład wektora losowego o danym rozkładzie ciągłym.	K_U03 K_U09 K_U11	3 3 5
WaRP_I_12	Zna i rozumie pojęcie niezależności zmiennych losowych oraz charakteryzacje tego pojęcia w przypadku rozkładów ciągłych i dyskretnych.	K_W03 K_W04	3 4
WaRP_I_13	Potrafi wyznaczyć dystrybuanty /gęstości / funkcje masy rozkładów brzegowych wektora losowego o danym rozkładzie prawdopodobieństwa i na tej podstawie zweryfikować niezależność zmiennych wchodzących w skład tego wektora.	K_U03 K_U09 K_U11	3 4 5
WaRP_I_2	Posługuje się modelem prawdopodobieństwa klasycznego podczas rozwiązywania zadań w zakresie skończonych przestrzeni jednakowo prawdopodobnych zdarzeń elementarnych.	K_U01 K_U10	3 4
WaRP_I_3	Posługuje się modelem prawdopodobieństwa geometrycznego przy rozwiązywań zadań, w których przestrzenią zdarzeń elementarnych jest borelowski podzbiór R^n o skończonej i dodatniej mierze Lebesgue'a.	K_U01 K_U03	3 3
WaRP_I_4	Potrafi posługiwać się pojęciami prawdopodobieństwa warunkowego oraz wzajemnej niezależności zdarzeń i ich rodzin, a także stosować związane z nimi twierdzenia do wyznaczenia prawdopodobieństw zdarzeń w ramach rozmaitych doświadczeń losowych.	K_U01 K_U03 K_U11	3 2 5
WaRP_I_5	Posiada wiedzę z zakresu teorii miary (dot. σ-ciała, mierzalności, σ-addytywnych funkcji zbioru i całki Lebesgue'a względem dowolnej miary) niezbędną w teorii prawdopodobieństwa.	K_W03 K_W04	3 4

		K_W05	3
WaRP_I_6	Potrafi wykorzystywać wiedzę dotyczącą zmiennych losowych i ich rozkładów / dystrybuant do budowy i analizy nieskomplikowanych modeli probabilistycznych słownie opisanych doświadczeń losowych.	K_U01 K_U03 K_U11	4 3 5
WaRP_I_7	Zna przykłady dyskretnych i ciągłych rozkładów prawdopodobieństwa, rozumie ich znaczenie oraz wie, że niektóre z nich odpowiadają konkretnym schematom losowym.	K_W05	5
WaRP_I_8	Potrafi zbadać, czy dana funkcja jest dystrybuantą pewnego rozkładu prawdopodobieństwa oraz wyznaczyć dystrybuantę rozkładu o zadanej gęstości / funkcji masy i na odwrót. Potrafi wyznaczyć gęstość / funkcję masy borelowskiego przekształcenia zmiennej losowej o zadanym rozkładzie.	K_U03 K_U09 K_U11	3 4 5
WaRP_I_9	Potrafi wyznaczyć wartość oczekiwaną i wariancję funkcji zmiennej losowej o (ciągłym lub dyskretnym) rozkładzie prawdopodobieństwa zadanym w sposób bezpośredni lub wynikający z opisu doświadczenia losowego.	K_U03 K_U09 K_U11	4 3 5

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WzRPr1_fs_1	discussion classes	30	course work	WaRP_I_1, WaRP_I_10, WaRP_I_11, WaRP_I_12, WaRP_I_13, WaRP_I_2, WaRP_I_3, WaRP_I_4, WaRP_I_5, WaRP_I_6, WaRP_I_7, WaRP_I_8, WaRP_I_9	a03, a05, b04, e01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing*	Yes

		knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class	
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elementary probability theory II**
Module code	W4-MT-S1-25-WzRPr2
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Przedmiot stanowi kontynuację i pogłębienie modułu "Warsztaty z rachunku prawdopodobieństwa I" i ma na celu wsparcie realizacji kursu "Rachunek prawdopodobieństwa A". W założeniu warsztaty winny zapewnić studentom czas do samodzielnego rozwiązywania zadań rachunkowych i problemowych (z pomocą prowadzącego) oraz wspólnej dyskusji nad zagadnieniami teoretycznymi z zakresu probabilistyki, którego często brakuje podczas ćwiczeń / konwersatorium do wykładu kursowego. W ramach zajęć realizowane będą zagadnienia wybrane spośród wyszczególnionych poniżej, w zależności od potrzeb studentów. Przede wszystkim uwzględnione zostaną te, których przyswojenie podczas konwersatorium / ćwiczeń z Rachunku prawdopodobieństwa A okazało się dla studentów problematyczne. 1. Kowariancja, współczynnik korelacji oraz macierz kowariancji wektora losowego. 2. Wielowymiarowy rozkład normalny. 3. Funkcja charakterystyczna rozkładu prawdopodobieństwa. 4. Różne rodzaje zbieżności zmiennych losowych. 5. Prawa wielkich liczb. 6. Centralne twierdzenie graniczne. 7. Warunkowa wartość oczekiwana. 8. Martyngały.
List of modules that must be completed before starting this module (if necessary)	not applicable

8.	Learning outcomes of the module		
Code	**Description**	**Learning outcomes of the programme**	**Level of competenc (scale 1-5)**
WaRP_II_01	Zna pojęcie kowariancji, współczynnika korelacji liniowej oraz macierzy kowariancji wektora losowego i jej własności. Rozumie różnicę między niezależnością i brakiem korelacji zmiennych losowych.	K_W04	4
WaRP_II_02	Potrafi wyznaczyć macierz kowariancji wektora losowego o zadanym rozkładzie (ciągłym lub dyskretnym) oraz znaleźć macierz kowariancji jego dowolnego przekształcenia liniowego.	K_U03 K_U04 K_U11	3 3 5
WaRP_II_03	Potrafi wyznaczyć wektor wartości oczekiwanych i macierz kowariancji wielowymiarowego rozkładu normalnego o zadanej gęstości, jak również gęstość takiego rozkładu na podstawie znajomości tych parametrów.	K_U04 K_U11	3 5
WaRP_II_04	Zna pojęcie funkcji charakterystycznej rozkładu prawdopodobieństwa, jej własności oraz najważniejsze fakty z nią związane (jak wzór Levy'ego na odwrócenie, twierdzenie o odwrotnym przekształceniu Fouriera, twierdzenie dot. funkcji charakterystycznej rozkładu dyskretnego i twierdzenie o różniczkowaniu funkcji odwrotnej). Pamięta wzory funkcji charakterystycznych najważniejszych rozkładów.	K_W04 K_W05	4 3
WaRP_II_05	Potrafi wyznaczyć funkcje charakterystyczne wybranych (ciągłych i dyskretnych) rozkładów prawdopodobieństwa oraz gęstości / funkcje masy wybranych rozkładów na podstawie ich funkcji charakterystycznych. Potrafi wykorzystać twierdzenie o różniczkowaniu funkcji charakterystycznej do wyznaczenia momentów wyższego rzędu zmiennej losowej o danym rozkładzie.	K_U03 K_U11	3 5
WaRP_II_06	Zna definicje różnych rodzajów zbieżności zmiennych losowych oraz implikacje między nimi; ponadto zna przykłady ilustrujące brak implikacji w określonym kierunku.	K_W04 K_W05	4 5
WaRP_II_07	Zna centralne twierdzenie granicznego Lindeberga-Levy'ego (dla ciągu niezależnych zmiennych losowych o jednakowym rozkładzie) i najważniejsze kryteria gwarantujące spełnienie mocnego i słabego prawa wielkich liczb. Ma właściwe intuicje co do tych twierdzeń i rozumie ich w znacznie w statystyce.	K_W01 K_W03 K_W04	2 3 4
WaRP_II_08	Potrafi stosować centralne twierdzenie graniczne do wyznaczania przybliżonych prawdopodobieństw zdarzeń opisanych przez sumy niezależnych zmiennych losowych. W wybranych przypadkach potrafi wykazać, że dany ciąg zmiennych losowych spełnia mocne / słabe prawo wielkich liczb, bądź udowodnić, że prawo to nie zachodzi.	K_U01 K_U09 K_U11	4 2 5
WaRP_II_09	Zna i rozumie pojęcie warunkowej wartości oczekiwanej zmiennej losowej względem σ-ciała (w szczególności generowanego przez wektor losowy) oraz jej własności. Wie, jak (w oparciu o to pojęcie) sformułować uogólnioną definicję prawdopodobieństwa warunkowego i warunkowego rozkładu zmiennej losowej (względem wektora losowego).	K_W02 K_W04	2 4
WaRP_II_10	Potrafi wyznaczyć warunkową wartość oczekiwaną E[f(X,Y)|Y] dla danego wektora losowego (X,Y) o rozkładzie ciągłym lub dyskretnym, jak również wyznaczyć wartość oczekiwaną zmiennej f(X) przy danym rozkładzie warunkowym zmiennej X.	K_U03 K_U09 K_U11	3 3 5
WaRP_II_11	Zna pojęcia filtracji przestrzeni probabilistycznej, martyngału, podmartyngału oraz nadmartyngału. Rozumie intuicje stojące za tymi pojęciami oraz potrafi wskazać ilustrujące je przykłady.	K_W04 K_W05	4 4
WaRP_II_12	Potrafi zbadać, czy (lub dla jakich wartości parametrów) dany ciąg zmiennych losowych jest (pod/nad) martyngałem względem zadanej filtracji.	K_U01 K_U09	2 4

		K_U11	5

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WzRPr2_fs_1	discussion classes	15	course work	WaRP_II_01, WaRP_II_02, WaRP_II_03, WaRP_II_04, WaRP_II_05, WaRP_II_06, WaRP_II_07, WaRP_II_08, WaRP_II_09, WaRP_II_10, WaRP_II_11, WaRP_II_12	a03, a05, b04, e01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes

a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elementary algebra I**
Module code	W4-MT-S1-25-WzAlg1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem ,,Warsztatów z algebry I" jest ugruntowanie i poszerzenie wiadomości zdobytych w szkole pozwalających słuchaczowi na studiowanie i zrozumienie kursu ,,Wstęp do algebry i teorii liczb". W szczególności moduł ten utrwala główne fakty z zakresu algebry i szeroko pojętej arytmetyki. W ramach kursu przewiduje się realizację następujących treści programowych: 1. Działania i ich własności w zbiorze liczb całkowitych, liczby pierwsze, Zasadnicze Twierdzenie Arytmetyki, NWD i NWW, dzielenie z resztą, algorytm Euklidesa. 2. Arytmetyczne zagadnienia z zakresu konkursów szkolnych: kongruencje, arytmetyka modularna, liniowe równania diofantyczne. 3. Wielomiany jednej zmiennej, dodawanie, mnożenie i dzielenie z resztą wielomianów, pierwiastki wielomianu, twierdzenie Bézout. 4. Funkcje trygonometryczne i ich własności, obliczanie wartości funkcji trygonometrycznych. 5. Klasyczne struktury algebraiczne, liczby zespolone. 6. Macierze i działania na macierzach, wyznacznik macierzy. 7. Rozwiązywanie układów równań liniowych, metoda Cramera i metoda eliminacji Gaussa.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WzAlg1_1	zna i rozumie pojęcia z zakresu algebry i arytmetyki szkolnej	K_W04	4
WzAlg1_2	potrafi posługiwać się pojęciami z zakresu fundamentów algebry i arytmetyki w mowie i piśmie, potrafi wskazywać przykłady	K_U01 K_U04	4 4
WzAlg1_3	zna klasyczne struktury algebraiczne	K_W04	2
WzAlg1_4	umie operować pojęciem liczby zespolonej	K_U04	3
WzAlg1_5	posługuje się pojęciem macierzy, umie obliczać wyznaczniki	K_U04	3
WzAlg1_6	rozwiązuje układy równań liniowych	K_U04	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WzAlg1_fs_1	discussion classes	30	course work	WzAlg1_1, WzAlg1_2, WzAlg1_3, WzAlg1_4, WzAlg1_5, WzAlg1_6	e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elementary algebra II**
Module code	W4-MT-S1-25-WzAlg2
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem ,,Warsztatów z algebry II" jest uzupełnienie wiadomości dotyczących elementów geometrii analitycznej i rozwiązywania układów równań liniowych omawianych w szkole średniej, a także utrwalenie wiadomości i umiejętności zdobywanych w ramach przedmiotu „Algebra liniowa”. Przewiduje się realizację następujących treści programowych: 1. Przestrzeń współrzędnych oraz jej uogólnienie do przestrzeni liniowej, operacje na wektorach i kombinacje liniowe; podprzestrzenie liniowe. 2. Liniowa niezależność wektorów, baza i wymiar przestrzeni liniowej. 3. Struktura zbioru rozwiązań układu równań liniowych i jego interpretacja geometryczna. 4. Klasyczne przekształcenia geometryczne i ich uogólnienia do przekształceń liniowych. 5. Wartości i wektory własne przekształceń geometrycznych. 6. Przestrzeń euklidesowa i jej uogólnienia, prostopadłość wektorów.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WzAlg2_1	zna główne pojęcia i fakty z zakresu algebry liniowej rozszerzające pojęcia poznane w szkole średniej oraz rozumie ich interpretację w klasycznej geometrii analitycznej	K_W04	3
WzAlg2_2	potrafi rozwiązywać układy równań liniowych oraz interpretować strukturę zbioru rozwiązań tych układów w języku algebry liniowej	K_U01 K_U04	3 4
WzAlg2_3	potrafi posługiwać się układami równań liniowych do rozwiązania zadań związanych z własnościami układów wektorów, przekształceniami geometrycznymi i prostopadłością wektorów	K_U04	4
WzAlg2_4	potrafi wykorzystać wyznaczniki oraz rzędy macierzy w rozwiązywaniu problemów związanych z układami równań liniowych, własnościami układów wektorów przestrzeni liniowych, przekształceniami geometrycznymi, wartościami własnymi przekształceń geometrycznych oraz iloczynem skalarnym	K_U04	4

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WzAlg2_fs_1	discussion classes	15	course work	WzAlg2_1, WzAlg2_2, WzAlg2_3, WzAlg2_4	e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elementary analysis I**
Module code	W4-MT-S1-25-WzAna1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem zajęć jest wzrost wśród studentów kompetencji matematycznych w zakresie analizy matematycznej poprzez przypomnienie, utrwalenie i wzbogacenie podczas prowadzonych zajęć metod analizy matematycznej. Zakres materiału przewidywany do realizacji obejmuje: liczby rzeczywiste, zasadę indukcji matematycznej, funkcje i ich własności (w tym funkcje cyklometryczne), ciągi liczbowe, wiodące pojęcia teorii przestrzeni metrycznych, granice funkcji, ciągłość funkcji i jednostajną ciągłość funkcji.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WzAna1_1	zna kluczowe pojęcia i twierdzenia z omawianych działów analizy matematycznej	K_W04	1
WzAna1_2	zna przykłady ilustrujące omawiane pojęcia analizy matematycznej	K_W05	2
WzAna1_3	zna i rozumie budowę teorii przestrzeni metrycznych	K_W02 K_W05	1 2
WzAna1_4	umie prowadzić dowody metodą indukcji matematycznej	K_U01 K_U03	2 1
WzAna1_5	posługuje się pojęciem zbieżności i granicy	K_U03	1

9. Methods of conducting classes

Code	Category	Name (description)
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*

d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WzAna1_fs_1	discussion classes	30	course work	WzAna1_1, WzAna1_2, WzAna1_3, WzAna1_4, WzAna1_5	b08, d04, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elementary analysis II**
Module code	W4-MT-S1-25-WzAna2
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem zajęć jest wzrost wśród studentów kompetencji matematycznych w zakresie analizy matematycznej poprzez przypomnienie, utrwalenie i wzbogacenie podczas prowadzonych zajęć metod analizy matematycznej. Zakres materiału przewidywany do realizacji: 1. Rachunek różniczkowy: pojęcie pochodnej i jej interpretacja geometryczna, obliczanie pochodnych w oparciu o klasyczne wzory, badanie funkcji, zadania optymalizacyjne nawiązujące m.in. do geometrii szkolnej. 2. Rachunek całkowy: pojęcie funkcji pierwotnej i całki nieoznaczonej, całkowanie przez części i przez podstawienie, pojęcie całki Riemanna i jej interpretacja geometryczna, związek z całką nieoznaczoną - wzór Newtona-Leibniza, obliczanie pola powierzchni ograniczonej wykresami funkcji (m.in. pola koła), długości krzywej (w tym długości okręgu), objętości i pola powierzchni bocznej bryły obrotowej (m.in. stożka). 3. Szeregi liczbowe: suma szeregu, jego zbieżność i podstawowe kryteria zbieżności, zadania związane z szeregiem geometrycznym.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WzAna2_1	zna kluczowe pojęcia i twierdzenia z omawianych działów analizy matematycznej oraz przykłady je ilustrujące	K_W04 K_W05	3 3
WzAna2_2	zna zasadnicze fakty rachunku różniczkowego i całkowego funkcji jednej zmiennej	K_W02 K_W04	2 3
WzAna2_3	umie wykorzystać twierdzenia i metody rachunku różniczkowego funkcji jednej zmiennej w zagadnieniach związanych z optymalizacją, poszukiwaniem ekstremów lokalnych i globalnych oraz badaniem przebiegu funkcji	K_U03 K_U14 K_U16	4 3 3
WzAna2_4	posługuje się definicją całki oraz umie całkować funkcje jednej zmiennej przez części i przez podstawienie; potrafi wyrażać pola powierzchni gładkich i objętości jako odpowiednie całki	K_U01 K_U03	4 4

		K_U14	4
WzAna2_5	potrafi badać zbieżność szeregów liczbowych	K_U01 K_U03	3 3

9. Methods of conducting classes

Code	Category	Name (description)
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WzAna2_fs_1	discussion classes	15	course work	WzAna2_1, WzAna2_2, WzAna2_3, WzAna2_4, WzAna2_5	b08, d04, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elements of General Topology**
Module code	W4-MT-S1-25-ETop
Number of the ECTS credits	4
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest nabycie wiedzy z zakresu topologii ogólnej a także nabycie umiejętności pozwalających na rozpoznawanie własności topologicznych zbiorów w różnych przestrzeniach topologicznych. W ramach modułu planowane jest omówienie treści z zakresu: 1. Metody wprowadzania topologii, zbiory otwarte i zbiory domknięte 2. Domknięcie oraz wnętrze zbioru 3. Baza przestrzeni topologicznej 4. Punkt skupienia zbioru, pochodna zbioru 5. Podprzestrzeń przestrzeni topologicznej 6. Aksjomaty oddzielania 7. Odwzorowania ciągłe w przestrzeniach topologicznych 8. Przestrzenie topologiczne zwarte 9. Przestrzenie metryczne zwarte 10. Przestrzenie metryczne zupełne
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WTop_01	zna podstawowe pojęcia z topologii	K_W04 K_W05	3 4
WTop_02	umie sprawdzać, czy dana rodzina podzbiorów jest topologią i zna metody wprowadzania topologii	K_U02 K_U06 K_W03 K_W04 K_W05	3 3 1 2 3

WTop_03	potrafi wskazać wnętrze i domknięcie zbioru w zadanej topologii	K_U01 K_U02 K_U06	2 2 4
WTop_04	zna przykłady topologii wyznaczonej przez metrykę na prostej i płaszczyźnie rzeczywistej i potrafi określać własności zbiorów w tych przestrzeniach topologicznych	K_U01 K_U02 K_U03 K_U06 K_W04 K_W05	1 1 1 1 1 4
WTop_05	zna i rozumie pojęcie bazy przestrzeni topologicznej, punktu skupienia zbioru oraz granicy ciągu w przestrzeni topologicznej	K_W04 K_W05	3 4
WTop_06	zna pojęcie i przykłady funkcji ciągłej	K_W03 K_W04 K_W05	1 1 4
WTop_07	umie badać istnienie granicy ciągu oraz sprawdzać ciągłość funkcji w poznanych przestrzeniach topologicznych	K_U01 K_U02 K_U06	3 3 3
WTop_08	Zna aksjomaty oddzielania i potrafi wskazać przykłady topologii spełniających, bądź nie spełniających poszczególne z nich	K_U01 K_U02 K_U06 K_W05	2 1 3 3
WTop_09	zna pojęcia przestrzeni zwartej i przestrzeni zupełnej; zna charakteryzację przestrzeni zwartej w przestrzeniach metrycznych oraz związek pomiędzy zwartością a zupełnością przestrzeni metrycznej	K_W04 K_W05	2 2
WTop_10	potrafi opisać postać zbiorów otwartych w podprzestrzeni przestrzeni topologicznej	K_U01 K_U02 K_U06	2 2 3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*

c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WTop_fs_1	lecture	15	exam	WTop_01, WTop_04, WTop_05, WTop_06, WTop_08, WTop_09, WTop_10	a01, c06, c07
WTop_fs_2	discussion classes	30	course work	WTop_01, WTop_02, WTop_03, WTop_04, WTop_05, WTop_06, WTop_07, WTop_08, WTop_09, WTop_10	b08, c06, d04, e01, e02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes

b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elements of Discrete Mathematics A**
Module code	W4-MT-S1-25-EMDyA
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Moduł ma na celu zaznajomienie studentów z klasycznymi zagadnieniami kombinatoryki skończonej i teorii grafów oraz wykształcenie umiejętności zliczania obiektów kombinatorycznych i przeprowadzania obliczeń z wykorzystaniem prostych chwytów kombinatorycznych. Przewiduje się realizację treści spośród: 1. Kombinacje, własności współczynników dwumianowych Newtona, obliczanie skończonych sum zawierających współczynnik Newtona. 2. Znajdowania liczby funkcji spełniających pewne ograniczenia, rozmieszczenia przedmiotów, wariacje, permutacje, multizbiory. 3. Własności permutacji, rozkład na cykle, rozkład na transpozycje, typ permutacji, liczby Stirlinga I rodzaju i ich własności. 4. Partycje zbiorów, liczby Stirlinga II rodzaju i ich własności, podziały liczb naturalnych na składniki dodatnie i ich własności. 5. Podział zbioru na bloki rozłączne liniowo uporządkowane - liczby Laha i ich własności. 6. Reguła włączania i wyłączania i zasada szufladkowa Dirichleta. 7. Równania rekurencyjne i funkcje tworzące. Liczby Fibonacciego i Catalana. 8. Elementy teorii grafów: podstawowe pojęcia, grafy proste, pełne, dwudzielne, marszruty i drogi, grafy Eulera i Hamiltona, Twierdzenie Halla o kojarzeniu małżeństw. 9. Liczby Ramseya i Twierdzenie podziałowe Ramseya (o kolorowaniu grafu).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EMDyA_1	potrafi wyznaczać liczby podzbiorów zbioru, permutacji, wariacji i kombinacji; stosuje zasadę włączania i wyłączania.	K_U01 K_U10 K_U13	1 5 1
EMDyA_2	potrafi sprawnie posługiwać się współczynnikami dwumianowymi Newtona	K_U10	5
EMDyA_3	potrafi rozkładać permutacje na cykle, wyznaczać rząd permutacji i jej znak	K_U04 K_U10	2 3

EMDyA_4	zna pojęcia i własności liczb Stirlinga I oraz II rodzaju a także podziału liczby naturalnej na składniki dodatnie oraz posługuje się diagramami Ferrersa w dowodzeniu własności takich podziałów	K_W03 K_W04 K_W05	1 1 2
EMDyA_5	potrafi rozróżniać grafy proste, pełne, dwudzielne i wyznaczać stopnie wierzchołków w grafie a także określać liczbę składowych spójnych grafu	K_U10	4
EMDyA_6	zna warunki konieczne i wystarczający istnienia drogi/cyklu Eulera w grafie	K_W05	2
EMDyA_7	zna pojęcie wariacji z powtórzeniami (multizbioru), zna jego interpretacje i zastosowania do rozwiązywania równań liniowych o skończenie wielu niewiadomych w liczbach naturalnych	K_U04 K_U10 K_W05	2 5 4
EMDyA_8	potrafi wyznaczać wzory rekurencyjne ciągów za pomocą stosowania obserwacji wykorzystujących regułę dodawania a także zna zastosowanie funkcji tworzących do znajdywania wzorów ogólnych ciągów rekurencyjnych	K_U03 K_U10 K_W05	2 4 3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
EMDyA_fs_1	lecture	15	exam	EMDyA_1, EMDyA_2, EMDyA_3,	a01, c06, c07

				EMDyA_4, EMDyA_5, EMDyA_6, EMDyA_7, EMDyA_8	
EMDyA_fs_2	discussion classes	15	course work	EMDyA_1, EMDyA_2, EMDyA_3, EMDyA_4, EMDyA_5, EMDyA_6, EMDyA_7, EMDyA_8	c06, c07, e01, e02

11.	**The student's work, apart from participation in classes, includes in particular:**		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elements of Programming**
Module code	W4-MT-S1-25-EProg
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu Elementy programowania jest nauczenie programowania w jednym wybranym języku programowania. W ramach tego modułu przewiduje się realizację następujących treści programowych: 1) Elementy programowania w języku algorytmicznym wysokiego poziomu: - środowisko programistyczne, - instrukcje warunkowe i iteracyjne, - pojęcie rekurencji, - podział programu na procedury lub funkcje, tworzące czytelną strukturę, - pojęcie i przeznaczenie zmiennej: globalnej i lokalnej, - pojęcie parametrów procedur i funkcji, mechanizm przekazywania parametrów, - operacje na plikach tekstowych. 2) Wybrane algorytmy klasyczne: - rozkład liczby na czynniki pierwsze, - algorytm Euklidesa, - znajdowanie najmniejszego lub/i największego elementu w zbiorze, - wyszukiwanie elementu w zbiorze uporządkowanym, - obliczanie wartości wielomianu - schemat Hornera, - wybrane algorytmy sortujące (przez wstawianie, przez wybieranie, bąbelkowe),
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EProg_01	The student knows the syntax of a selected higher-level programming language and knows the paradigms of structured and procedural programming.	K_W06	2
EProg_02	he uses: different types of variables, input/output instructions, arithmetic and logical operators, conditional and iterative instructions	K_U08 K_U09	5 5

EProg_03	knows basic algorithms and algorithmic techniques (iteration and recursion) and knows and discusses situations in which classic algorithms are used	K_W06	5
EProg_04	can implement the discussed algorithms	K_U08 K_U09	5 5
EProg_05	uses a compiler or interpreter of a selected programming language; uses a selected programming environment to save, run and test a program	K_U08	5
EProg_06	knows the properties of fixed-point and floating-point notation and is aware of various types of errors occurring in numerical calculations, knows the basic positional number systems	KN_I_W08	5

9. Methods of conducting classes

Code	Category	Name (description)
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	laboratory classes	45	course work	EProg_01, EProg_02, EProg_03, EProg_04, EProg_05, EProg_06	c07, d01, d02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent*	Yes

		elements of the curriculum (as preparation for class participation)	
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elements of school logic**
Module code	W4-MT-S1-25-WzLog
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	The aim of the classes is to develop and strengthen competences related to the use of the formal language of logic used in mathematics, concepts from the basics of mathematics and proof techniques used in various branches of mathematics.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WzLog_1	dobrze rozumie przedstawioną na zajęciach teorię i znaczenie dowodu w matematyce, a także pojęcie istotności założeń	K_W03	3
WzLog_2	zna wybrane pojęcia i metody logiki matematycznej, teorii mnogości, i matematyki dyskretnej zawarte w podstawach innych dyscyplin matematyki	K_W04	1
WzLog_3	potrafi w sposób zrozumiały, w mowie i piśmie, przedstawić poprawne rozumowania matematyczne, formułować twierdzenia i definicje z zakresu tematyki modułu	K_U01	2
WzLog_4	posługuje się rachunkiem zdań i kwantyfikatorów; potrafi poprawnie używać kwantyfikatorów także w języku potocznym	K_U02	3
WzLog_5	zna ograniczenia własnej wiedzy i rozumie potrzebę dalszego kształcenia; potrafi precyzyjnie formułować pytania, służące pogłębieniu własnego zrozumienia danego tematu lub odnalezieniu brakujących elementów rozumowania	K_K01	2

9. Methods of conducting classes

Code	Category	Name (description)
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*

e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WzLog_fs_1	discussion classes	30	course work	WzLog_1, WzLog_2, WzLog_3, WzLog_4, WzLog_5	b08, d04, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elements of Statistics**
Module code	W4-MT-S1-25-ESt
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu Elementy statystyki jest przekazanie studentom wiedzy na temat teorii i metod analizy statystycznej, w tym twierdzeń i pojęć związanych z estymacją punktową i przedziałową, testowaniem hipotez oraz analizą zależności między zmiennymi. Moduł obejmuje również praktyczne zastosowanie narzędzi informatycznych, takich jak arkusz kalkulacyjny, do opracowywania danych i interpretacji wyników w różnych dziedzinach nauki. Przewiduje się realizację następujących treści programowych: 1. Estymacja punktowa i przedziałowa, pojęcie testu statystycznego. 2. Organizacja badań statystycznych: gromadzenie danych, opracowanie i graficzna prezentacja danych, konstrukcja szeregów statystycznych. 3. Pojęcie próby i jej opis: miary położenia, miary zmienności, miary asymetrii, miary koncentracji. 4. Wyliczanie i graficzna prezentacja statystyk opisowych za pomocą narzędzi informatycznych, takich jak arkusz kalkulacyjny. 5. Przedziały ufności i parametryczne testy istotności dla wartości oczekiwanej oraz wariancji. Minimalna liczebność próby. 6. Analiza współzależności zmiennych mierzalnych: analiza korelacji i regresji liniowej oraz odpowiadające im przedziały ufności i testy statystyczne. 7. Analiza współzależności cech niemierzalnych: rangowy współczynnik korelacji. 8. Wykorzystanie narzędzi informatycznych, takich jak arkusz kalkulacyjny, do analizy danych statystycznych z różnych dziedzin nauki.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ESta_1	zna i rozumie w zaawansowanym stopniu pojęcia, twierdzenia, techniki estymacji punktowej i przedziałowej, metody wnioskowania statystycznego obejmujące ogólne pojęcie testu statystycznego, a także zna i rozumie pojęcie próby i metody jej opisu oraz badania zależności w przypadku zmiennych mierzalnych, jak i niemierzalnych	K_W04	1
ESta_2	zna przykłady ilustrujące wybrane pojęcia statystyczne, a także przykłady błędnych interpretacji wyników badań oraz nieuprawnionych wnioskowań statystycznych	K_W05	2
ESta_3	potrafi zorganizować badanie statystyczne wraz z interpretacją wyników ujętych w postaci tabel i wykresów statystycznych oraz wykorzystać je do formułowania wniosków i podejmowania decyzji	K_U14	2

ESta_4	potrafi dobrać i stosować właściwe narzędzia informatyczne, uwzględniając arkusz kalkulacyjny, do gromadzenia, opracowania i prezentacji danych, a także do wyliczania i graficznej prezentacji statystyk opisowych dotyczących zagadnień z różnych dziedzin nauki	K_U07	2
ESta_5	potrafi operować pojęciami i twierdzeniami statystyki opisowej oraz wnioskowania statystycznego (przedziały ufności i testy istotności) z wykorzystaniem statystycznych charakterystyk populacji (wartość średnia, wariancja) i ich odpowiedników próbkowych	K_U11	2
ESta_6	potrafi przedstawić poprawne rozumowania statystyczne i formułować wnioski z przeprowadzonych analiz oraz budować i analizować model regresji liniowej	K_U01	1
ESta_7	potrafi dobrać i zastosować odpowiednie metody statystyczne, w tym przedziały ufności i testy statystyczne, w różnych dziedzinach nauki, wykorzystując wybrane oprogramowanie do analizy danych, takie jak arkusz kalkulacyjny, w celu rozwiązania problemów z różnych dziedzin nauki	K_U12	4

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
ESta_fs_1	lecture	30	exam	ESta_1, ESta_2, ESta_5	a01, f02
ESta_fs_2	laboratory classes	30	course work	ESta_3, ESta_4, ESta_5, ESta_6, ESta_7	d01, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the*	No

		range of activities indicated in it as required for full participation in classes	
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Elements of the Structure of matter**
Module code	KN-F-EBM
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest przekazanie słuchaczom ogólnej wiedzy dotyczącej współczesnych poglądów na temat budowy materii we wszystkich skalach wielkości od mikro- do makro-świata. W trakcie zajęć studenci spróbują odpowiedzieć na pytania o pochodzenie i losy wszechświata, co jest najmniejszym budulcem materii i jak cząstki elementarne oddziałują ze sobą tworząc większe struktury (jądra atomowe, atomy, molekuły, ciało stałe itp.). W ramach modułu przedstawione zostaną wybrane teoretyczne jak i eksperymentalne aspekty fizyki cząstek elementarnych, fizyki jądra atomowego, fizyki ciała stałego oraz astrofizyki i kosmologii. Moduł realizowany będzie w formie warsztatów, w trakcie których studenci poprzez rozwiązywanie zadań, udział w dyskusji, przygotowywanie prezentacji i udział w eksperymencie nauczą się interpretować wszechświat, który ich otacza. Szczegółowy opis zagadnień określony zostanie w sylabusie. Treści realizowane w ramach modułu są zgodne z aktualną podstawą programową z fizyki obowiązującą w szkole podstawowej i ponadpodstawowej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EBM_01	zna podstawowe oddziaływania fizyczne odpowiedzialne za tworzenie struktury materii	KN_NDP_F_S1_W01	5
EBM_02	zna teorie i modele budowy mikro i makro-świata	KN_NDP_F_S1_W02	5
EBM_03	zna przykłady poznanych praw fizyki w otaczającej rzeczywistości oraz potrafi powiązać najważniejsze zjawiska fizyczne otaczającego nas świata z elementami budowy materii w różnych skalach wielkości	KN_NDP_F_S1_W03	5
EBM_04	potrafi precyzyjnie formułować pytania służące pogłębianiu własnego zrozumienia danego tematu	KN_NDP_F_S1_U01	4
EBM_05	potrafi pozyskiwać informacje z literatury, baz danych i innych źródeł; potrafi integrować pozyskane informacje i wyciągać wnioski	KN_NDP_F_S1_U06	4
EBM_06	posiada umiejętność przygotowania i przedstawienia prezentacji ustnej	KN_NDP_F_S1_K01	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop

		an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
EBM_fs_01	workshop	20	course work	EBM_01, EBM_02, EBM_03, EBM_04, EBM_05, EBM_06	a03, b01, b02, b04, c02, c06, c07, d02, d03, e01, e02, e06, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No

b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**English for mathematics**
Module code	W4-MT-S1-25-EMat
Number of the ECTS credits	1
Language of instruction	English
Purpose and description of the content of education	Celem modułu jest zaznajomienie studentów z angielską terminologią pojęć matematycznych, poprawnym tłumaczeniem pojęć matematycznych na język angielski (i na odwrót). Na zajęciach nacisk będzie położony na czytanie, pisanie, słuchanie i mówienie w języku angielskim o wybranych zagadnieniach matematycznych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EMat_01	student zna pojęcia matematyczne w języku angielskim	K_W04	2
EMat_02	student potrafi zaprezentować (w mowie i piśmie) wybrany przez siebie materiał po angielsku	KJ.2023_U K_U01 K_U13 K_U16	5 2 2 3
EMat_03	student jest gotów do szukania informacji w literaturze oraz doceniania uczciwości intelektualnej	K_K01 K_K04	2 3

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification

		explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	discussion classes	15	course work	EMat_01, EMat_02, EMat_03	a03, a05, c07, d02, d03, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class	No

		exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class	
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
e01	Activities complementary to the classes	Undertaking, on one's own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**English language course 1**
Module code	LJA-2023-01
Number of the ECTS credits	3
Language of instruction	English
Purpose and description of the content of education	The module aims to develop communicative language competences and to stimulate the acquisition of skills in oral and written language reception and production as well as in language interaction and mediation, taking into account different varieties and registers of the English language and the necessary language strategies. The module develops the ability to learn, to independently search for and select information and sources of knowledge, and to work in a team. The main emphasis is placed on strengthening the skills of effective communication with others and the fluent use of English in social, educational or professional contacts in accordance with the criteria laid out in the Common European Framework of Reference for Languages (CEFR).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
LJA1_1	Can, following the teacher's instructions, use his/her general knowledge to develop and practice listening, reading, writing and speaking skills in English, can formulate clear and correct, moderately complex oral and written text on various topics, effectively and properly using the relevant vocabulary and rules for the text organization in accordance with the criteria laid out in the Common European Framework of Reference for Languages (CEFR).	KJ.2023_U	2
LJA1_2	2 Can search, collect and use general information contained in English-language texts of various levels of difficulty, can present their opinions using correct language constructions.	KJ.2023_U	2
LJA1_3	Can, following general instructions, properly select sources and general information needed to learn English.	KJ.2023_U	2

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*

a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b06	Problem-solving methods	Activating method – staged drama/drama *experiential learning; solving a problem by acting out a role; a.k.a. a role-playing method; role-players interpret their roles in an individual way; the identification with the role is achieved through the activation of the senses, imagination and speech, the stimulation of gesture and movement, etc.; the aim of drama is to experience situations, problems and events mediated by the role; staged drama is a role-playing method enriched with props and stage scenery illustrating a theme*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c03	Demonstration methods	Audio playback / audio drama *preparation and reproduction of sound material (audio recording) in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as a method of sound perception, including the appreciation of a musical piece, an artistic audio drama, an oral presentation of an artistic or scientific text as well as a media text; analysis of the sound material recorded on a carrier with a view to studying a sound-related phenomenon*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
LJA1_lekt	language classes	30	course work	LJA1_1, LJA1_2, LJA1_3	a03, a05, b06, c02, c03, c06, c07, d02, d03, d04, e07, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**English language course 2**
Module code	LJA-2023-02
Number of the ECTS credits	3
Language of instruction	English
Purpose and description of the content of education	The module aims to develop communicative language competences and to stimulate the acquisition of skills in oral and written language reception and production as well as in language interaction and mediation, taking into account different varieties and registers of the English language and the necessary language strategies. The module develops the ability to learn, to independently search for and select information and sources of knowledge, and to work in a team. The main emphasis is placed on strengthening the skills of effective communication with others and the fluent use of English in social, educational or professional contacts in accordance with the criteria laid out in the Common European Framework of Reference for Languages (CEFR).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
LJA2_1	Can effectively use the acquired detailed knowledge in order to develop and practice listening, reading, writing and speaking skills in English, can formulate clearly and correctly more complex oral and written texts on various topics, effectively and correctly using the relevant vocabulary, rules of text organization, in accordance in accordance with the criteria laid out in the Common European Framework of Reference for Languages (CEFR).	KJ.2023_U	2
LJA2_2	Can search, analyse, evaluate and make use of specific information contained in more complex English texts on topics specified in the module syllabus.	KJ.2023_U	2
LJA2_3	Can, to some extent independently, select the appropriate sources, specific information and tools for learning English and formulate his/her own opinions in English.	KJ.2023_U	2

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object*

		or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b06	Problem-solving methods	Activating method – staged drama/drama *experiential learning; solving a problem by acting out a role; a.k.a. a role-playing method; role-players interpret their roles in an individual way; the identification with the role is achieved through the activation of the senses, imagination and speech, the stimulation of gesture and movement, etc.; the aim of drama is to experience situations, problems and events mediated by the role; staged drama is a role-playing method enriched with props and stage scenery illustrating a theme*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c03	Demonstration methods	Audio playback / audio drama *preparation and reproduction of sound material (audio recording) in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as a method of sound perception, including the appreciation of a musical piece, an artistic audio drama, an oral presentation of an artistic or scientific text as well as a media text; analysis of the sound material recorded on a carrier with a view to studying a sound-related phenomenon*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
LJA2_lekt	language classes	30	course work	LJA2_1, LJA2_2, LJA2_3	a03, a05, b06, c02, c03, c06, d02, d03, d04, e07, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**English language course 3**
Module code	LJA-2023-03
Number of the ECTS credits	3
Language of instruction	English
Purpose and description of the content of education	The module aims to develop communicative language competences and to stimulate the acquisition of skills in oral and written language reception and production as well as in language interaction and mediation, taking into account different varieties and registers of the English language and the necessary language strategies. The module develops the ability to learn, to independently search for and select information and sources of knowledge, and to work in a team. The main emphasis is placed on strengthening the skills of effective communication with others and the fluent use of English in social, educational or professional contacts in accordance with the criteria laid out in the Common European Framework of Reference for Languages (CEFR).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
LJA3_1	Can independently use the acquired knowledge in order to develop and practice listening comprehension, reading, writing and speaking skills in English at an appropriate level.	KJ.2023_U	3
LJA3_2	Can effectively search, select, synthesize and use information contained in English-language texts of varying levels of difficulty on topics specified in the module syllabus.	KJ.2023_U	3
LJA3_3	Can communicate in English in speech and writing, producing texts on the topics specified in the module syllabus using a variety of communication channels and techniques, can participate in a debate, present and discuss their own and other people's positions and discuss them in English.	KJ.2023_U	3

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*

a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b06	Problem-solving methods	Activating method – staged drama/drama *experiential learning; solving a problem by acting out a role; a.k.a. a role-playing method; role-players interpret their roles in an individual way; the identification with the role is achieved through the activation of the senses, imagination and speech, the stimulation of gesture and movement, etc.; the aim of drama is to experience situations, problems and events mediated by the role; staged drama is a role-playing method enriched with props and stage scenery illustrating a theme*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c03	Demonstration methods	Audio playback / audio drama *preparation and reproduction of sound material (audio recording) in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as a method of sound perception, including the appreciation of a musical piece, an artistic audio drama, an oral presentation of an artistic or scientific text as well as a media text; analysis of the sound material recorded on a carrier with a view to studying a sound-related phenomenon*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
LJA3_lekt	language classes	30	course work	LJA3_1, LJA3_2, LJA3_3	a03, a05, b06, c02, c03, c06,

					d02, d03, d04, e07, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**English language course 4**
Module code	LJA-2023-04
Number of the ECTS credits	3
Language of instruction	English
Purpose and description of the content of education	The module aims to develop communicative language competences and to stimulate the acquisition of skills in oral and written language reception and production as well as in language interaction and mediation, taking into account different varieties and registers of the English language and the necessary language strategies. The module develops the ability to learn, to independently search for and select information and sources of knowledge, and to work in a team. The main emphasis is placed on strengthening the skills of effective communication with others and the fluent use of English in social, educational or professional contacts in accordance with the criteria laid out in the Common European Framework of Reference for Languages (CEFR).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
LJA4_1	Can effectively formulate complex problems in English, including those related to the studied degree program in order to practice listening, reading, writing and speaking skills in English.	KJ.2023_U	3
LJA4_2	Can independently search, analyse, evaluate, select, synthesize and use general and specific information contained in English-language texts of varying complexity.	KJ.2023_U	3
LJA4_3	Has the ability to understand, reproduce and create various types of written and oral texts that require advanced systemic knowledge of the English language, including specialist knowledge, using grammatical structures and vocabulary specified in the syllabus of the module. Can use the English language at B2 level or higher (or lower, as specified in the syllabus, depending on the level of the group selected by the student who has independent proof of competence in the English language at B2 level) in accordance with the Common European Framework of Reference for Languages (CEFR) using various channels and communication techniques to the extent appropriate for a given area of knowledge.	KJ.2023_U	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b06	Problem-solving methods	Activating method – staged drama/drama *experiential learning; solving a problem by acting out a role; a.k.a. a role-playing method; role-players interpret their roles in an individual way; the identification with the role is achieved through the activation of the senses, imagination and speech, the stimulation of gesture and movement, etc.; the aim of drama is to experience situations, problems and events mediated by the role; staged drama is a role-playing method enriched with props and stage scenery illustrating a theme*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c03	Demonstration methods	Audio playback / audio drama *preparation and reproduction of sound material (audio recording) in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as a method of sound perception, including the appreciation of a musical piece, an artistic audio drama, an oral presentation of an artistic or scientific text as well as a media text; analysis of the sound material recorded on a carrier with a view to studying a sound-related phenomenon*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text

		searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
LJA4_lekt	language classes	30	course work	LJA4_1, LJA4_2, LJA4_3	a03, a05, b06, c02, c03, c06, d02, d03, d04, e07, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Fundamentals of Physics I - Mechanics**
Module code	KN-F-PF1-M
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	W ramach modułu student zapoznaje się z następującymi zagadnieniami: podstawowe i pochodne jednostki stosowane w fizyce, wielkości fizyczne skalarne i wektorowe, kinematyka punktu materialnego, zasady dynamiki Newtona, opory ruchu, zasady zachowania, grawitacja, praca i energia, oscylator harmoniczny, mechanika bryły sztywnej, statyka i dynamika płynów. Treści realizowane w ramach modułu są zgodne z aktualną podstawą programową z fizyki obowiązującą w szkole podstawowej i ponadpodstawowej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
M_01	korzysta z pojęć wielkości fizycznych z różnych działów mechaniki, posługuje się odpowiednią terminologią fizyczną oraz korzysta z wiedzy matematycznej	KN_NDP_F_S1_U01	2
M_02	posiada podstawową wiedzę z kinematyki, dynamiki, mechaniki bryły sztywnej, statyki i dynamiki płynów, zasad zachowania pędu, momentu pędu i energii, grawitacji, oscylatora harmonicznego oraz zagadnień związanych z pracą i energią	KN_NDP_F_S1_W01	5
M_03	potrafi rozwiązywać problemy i zadania rachunkowe z mechaniki o średnim poziomie trudności	KN_NDP_F_S1_U04	5
M_04	wskazuje przykłady poznanych praw fizyki w otaczającej rzeczywistości oraz umie wyjaśnić działanie podstawowych urządzeń mechanicznych	KN_NDP_F_S1_U02 KN_NDP_F_S1_W03	4 4
M_05	potrafi sporządzić i interpretować graficzne przedstawienie zależności różnych wielkości fizycznych z mechaniki	KN_NDP_F_S1_U04	4
M_06	potrafi zaplanować proste eksperymenty z mechaniki oraz wnioskować na podstawie ich wyników	KN_NDP_F_S1_U03 KN_NDP_F_S1_U05	4 4

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*

e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
M_fs_01	workshop	45	course work	M_01, M_02, M_03, M_04, M_05, M_06	a01, a03, a05, b01, b02, b04, c02, c06, c07, d02, d03, e01, e02, e06, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No

a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Fundamentals of Physics II - Electricity and Magnetism**
Module code	KN-F-PF2-EM
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Podczas warsztatów student zapoznaje się z następującymi zagadnieniami: - Elektrostatyka: Ładunki elektryczne i pola, zasada zachowania ładunku. - Natężenie pola elektrycznego. - Prawo Coulomba. - Energia układu ładunków. Praca w polu elektrostatycznym. Potencjał elektryczny: Różnica potencjałów i potencjał. Kondensatory i pojemność. - Prąd elektryczny, Przewodnictwo elektryczne i prawo Ohma. Opór przewodnika. Prawa Kirchoffa, Siła elektromotoryczna. Obwody elektryczne.- Pole magnetyczne: Definicja i właściwości pola magnetycznego, Indukcja magnetyczna, Siła Lorentza, Prawo Biota-Savarta. Indukcja elektromagnetyczna, indukcja własna i wzajemna. Energia pola magnetycznego. Prąd przemienny: napięcie i natężenie skuteczne. Treści realizowane w ramach modułu są zgodne z aktualną podstawą programową z fizyki obowiązującą w szkole podstawowej i ponadpodstawowej. W czasie rozwiązywania zadań i zagadnień fizycznych stosuje poznane jednostki i potrafi je przeliczać. Do rozwiązywania zadań i zagadnień fizycznych wykorzystuje rachunek wektorowy, różniczkowy i całkowy. Uczy się rozwiązywania równań różniczkowych i stosowania przybliżeń w fizyce. Utrwala wyprowadzone podczas warsztatów wybrane wzory i zapamiętuje przykłady. Uczy się matematycznej i fizycznej interpretacji rozwiązań zadań. W ramach pracy własnej w oparciu o notatki oraz literaturę uzupełniającą dąży do utrwalenia pozyskanej wiedzy. Doskonali umiejętności matematyczne niezbędne do rozwiązywania zadań i problemów w fizyce. Podejmuje próby rozwiązania zadań zaproponowanych przez prowadzącego warsztaty. Utrwala prawa, wzory i przykłady definiujące zjawiska z elektryczności i magnetyzmu.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EM_01	rozumie oraz potrafi korzystać z pojęć fizycznych z zakresu elektryczności i magnetyzmu	KN_NDP_F_S1_W02	5
EM_02	posiada wiedzę z zakresu: praw elektrostatyki, praw opisujących prąd stały i przemienny, praw magnetyzmu	KN_NDP_F_S1_W02	5
EM_03	zna i rozwiązuje problemy i zadań rachunkowych z elektryczności i magnetyzmu na poziomie podstawowym i	KN_NDP_F_S1_U04	5

	rozszerzonym	KN_NDP_F_S1_W06	5
EM_04	sporządza wykresy i interpretuje zależności łączące różne wielkości fizyczne	KN_NDP_F_S1_U04	4
EM_05	zna i planuje proste eksperymenty z elektryczności i magnetyzmu oraz wnioskować na podstawie ich wyników	KN_NDP_F_S1_U03 KN_NDP_F_S1_W04 KN_NDP_F_S1_W05	4 4 4
EM_06	zna i odnajduje przykłady poznanych praw z elektryczności i magnetyzmu w otaczającej rzeczywistości oraz wyjaśnia ich rolę	KN_NDP_F_S1_W03	4

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook

		working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
EM_fs_01	workshop	40	course work	EM_01, EM_02, EM_03, EM_04, EM_05, EM_06	a03, b01, b02, b04, c02, c06, c07, d02, d03, e01, e02, e06, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No

a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Fundamentals of Physics III - Thermodynamics**
Module code	KN-F-PF3-T
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Moduł ma za zadanie zapoznanie studenta z podstawowymi pojęciami i prawami z zakresu termodynamiki. Na warsztatach student poznaje podstawowe pojęcia: układ, otoczenie, temperatura, równania wielkości fizycznych, czynniki termodynamiczne, parametry stanu, przemiana termodynamiczna, pojęcie gazu doskonałego, ogólne równanie stanu, formy wymiany energii, pojęcie energii wewnętrznej i entalpii, ogólna postać I zasady termodynamiki, zmiany stanów skupienia, zjawisko rozszerzalności cieplnej, zjawisko dyfuzji. Student uczy się zastosowani a fundamentalnych praw fizycznych do rozwiązywania problemów i zagadnień z zakresu termodynamiki. Poznane zagadnienia stosuje do rozwiązywania zadań rachunkowych, nabywa umiejętności w stosowaniu aparatu matematycznego, uczy się analizować procesy fizyczne zachodzące w otaczającym go świecie. Treści realizowane w ramach modułu są zgodne z aktualną podstawą programową obowiązującą w szkole podstawowej i ponadpodstawowej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
T_01	zna podstawowe problemy i zasady z zakresu termodynamiki	KN_NDP_F_S1_W01 KN_NDP_F_S1_W02 KN_NDP_F_S1_W03	5 5 5
T_02	rozumie podstawowe procesy termodynamiczne i zna formalizm matematyczny konieczny do ich opisu	KN_NDP_F_S1_W01 KN_NDP_F_S1_W02 KN_NDP_F_S1_W03 KN_NDP_F_S1_W04	5 5 5 5
T_03	potrafi opisać, wykorzystując pojęcia i wielkości fizyczne, podstawowe zjawiska termodynamiczne występujące w otaczającej go przyrodzie	KN_NDP_F_S1_U02 KN_NDP_F_S1_U07	4 5
T_04	potrafi w sposób zrozumiały, w mowie i w piśmie, przedstawić podstawowe problemy termodynamiczne	KN_NDP_F_S1_U01	4

T_05	potrafi zastosować właściwy aparat matematyczny do rozwiązywania podstawowych problemów termodynamicznych	KN_NDP_F_S1_U04	4
T_06	potrafi wyjaśnić na gruncie praw termodynamiki podstawowe procesy zachodzące w otaczającym go środowisku	KN_NDP_F_S1_U02	4
T_07	potrafi zaplanować proste eksperymenty z termodynamiki oraz wnioskować na podstawie ich wyników	KN_NDP_F_S1_U03 KN_NDP_F_S1_U05 KN_NDP_F_S1_U08	5 5 5

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*

e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
T_fs_01	workshop	30	course work	T_01, T_02, T_03, T_04, T_05, T_06, T_07	a01, a03, b01, b02, b04, c02, c07, d02, d03, e01, e02, e06, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills	No

		activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)	
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Fundamentals of Physics IV - Waves and Optics**
Module code	KN-F-PF4-FO
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest przekazanie wiedzy na temat falowo-cząsteczkowej natury zjawisk fizycznych. W trakcie zajęć student pozna własności fal mechanicznych, w tym dźwiękowych oraz fal elektromagnetycznych. Pozna prawo odbicia i załamania fal opisane w ujęciu optyki geometrycznej, a także równanie soczewki i równanie szlifierzy soczewek. Zapozna się również z podstawami optyki fizycznej (polaryzacja, dyfrakcja i interferencja światła) oraz uzyska podstawową wiedzę o teoriach opisujących propagację światła (foton a fala, dualizm cząsteczkowo-falowy). W drugiej części warsztatu student zdobędzie wiedzę z zakresu podstaw fizyki atomowej i molekularnej (budowa atomu, liczby kwantowe opisujące stan elektronu w atomie, funkcja falowa, wiązania cząsteczkowe). Rozwiązując zadania rachunkowe ugruntuje wiedzę i rozwinie umiejętności stosowania aparatu matematycznego oraz wzbogaci umiejętności analizy zjawisk i procesów fizycznych zachodzące w otaczającym go świecie. Po ukończeniu zajęć będzie potrafił zaplanować, przeprowadzić i wyjaśnić proste eksperymenty związane z omawianymi zagadnieniami. Treści realizowane w ramach modułu są zgodne z aktualną podstawa programową nauczania fizyki obowiązującą w szkole podstawowej i ponadpodstawowej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
FO_01	zna zagadnienia i prawa z zakresu fal mechanicznych i elektromagnetycznych, akustyki, optyki geometrycznej i fizycznej oraz budowy atomu	KN_NDP_F_S1_W01 KN_NDP_F_S1_W02	5 5
FO_02	zna i rozumie fizyczne zjawiska związane z propagacją i własnościami fal mechanicznych i elektromagnetycznych oraz dotyczących atomowej budowy materii i zna formalizm matematyczny konieczny do ich opisu	KN_NDP_F_S1_W02 KN_NDP_F_S1_W03	5 5
FO_03	potrafi wskazać w otaczającej go przyrodzie i opisać, z pomocą pojęć i wielkości fizycznych, zjawiska związane z falami mechanicznymi i elektromagnetycznymi	KN_NDP_F_S1_U01 KN_NDP_F_S1_U02	3 4
FO_04	potrafi w sposób zrozumiały, w mowie i w piśmie, przedstawić i wyjaśnić podstawowe problemy fizyki fal i fizyki atomowej	KN_NDP_F_S1_U01	4
FO_05	potrafi zastosować właściwy aparat matematyczny do rozwiązywania problemów fizyki fal i fizyki atomowej		

		KN_NDP_F_S1_U04	4

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*

d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
FO_fs_01	workshop	45	course work	FO_01, FO_02, FO_03, FO_04, FO_05	a01, a03, a05, b01, b02, b04, c02, c06, c07, d02, d03, e01, e02, e06, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those*	No

		developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)	
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**General Chemistry I**
Module code	W4-MT-S1-24-PCh1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Moduł Podstawy Chemii I ma za zadanie zapoznanie studenta z pojęciami i prawami z zakresu chemii. Student poznaje zasady nomenklatury i klasyfikacji związków chemicznych, wiadomości z zakresu budowy atomu i tworzenia wiązań w cząsteczkach, charakterystyki pierwiastków chemicznych, przebiegu reakcji i ich zapisu za pomocą równań reakcji. Potrafi przeprowadzić obliczenia chemiczne oraz wykonać doświadczenia chemiczne.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PCh1_01	Zna i rozumie prawa i pojęcia chemiczne i potrafi zilustrować je odpowiednimi przykładami. Potrafi zapisać równania reakcji chemicznych.	KN_Ch_U01 KN_Ch_W01	4 4
PCh1_02	Zna zasady nomenklatury związków chemicznych, zasady tworzenia wzorów sumarycznych i strukturalnych związków chemicznych.	KN_Ch_U01 KN_Ch_W01	4 4
PCh1_03	Potrafi objaśnić związki pomiędzy budową molekularną, a właściwościami makroskopowymi otaczającej go materii.	KN_Ch_U06 KN_Ch_W01	3 4
PCh1_04	Zna budowę atomu, rozumie mechanizm tworzenia się wiązań i zna ich rodzaje. Opisuje budowę cząsteczki związku chemicznego.	KN_Ch_W01	3
PCh1_05	Ma wiedzę z zakresu kinetyki i równowagi chemicznej.	KN_Ch_W01	2
PCh1_06	Wykonuje obliczenia chemiczne.	KN_Ch_U01 KN_Ch_W01	3 3
PCh1_07	Zna charakterystyki fizykochemiczne wybranych związków chemicznych oraz zasady BHP.	KN_Ch_U08	3
PCh1_08	Zna techniki laboratoryjne, potrafi zaprojektować i wykonać doświadczenia chemiczne.	KN_Ch_U06	4

		KN_Ch_U08 KN_Ch_W03	3 3
PCh1_09	Jest świadom poziomu swojej wiedzy i rozumie potrzebę uczenia się przez całe życie.	KN_Ch_K01	4

9. Methods of conducting classes

Code	Category	Name (description)
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PCh1_fs_01	laboratory classes	30	course work	PCh1_01, PCh1_02, PCh1_05, PCh1_07, PCh1_08, PCh1_09	e01
PCh1_fs_02	workshop	30	course work	PCh1_01, PCh1_02, PCh1_03, PCh1_04, PCh1_05, PCh1_06, PCh1_09	b02, b04, b09, d02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source*	Yes

		materials to be used in class	
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**General Chemistry II**
Module code	W4-MT-S1-24-PCh2
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Moduł Podstawy Chemii II ma za zadanie zapoznanie studenta z zaawansowanymi pojęciami i prawami z zakresu chemii. Student poznaje opis równowagi kwasowo-zasadowej w roztworach wodnych . Potrafi przeprowadzić odpowiednie obliczenia chemiczne oraz wykonać doświadczenia chemiczne związane z omawianymi zagadnieniami.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-24-PCh1] General Chemistry I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PCh2_01	Ma wiedzę dotyczącą równowag jonowych w wodnych roztworach elektrolitów.	KN_Ch_W01	2
PCh2_02	Wykonuje obliczenia chemiczne z zakresu równowag jonowych w wodnych roztworach elektrolitów.	KN_Ch_U01 KN_Ch_W01	2 2
PCh2_03	Zna teorie kwasów i zasad.	KN_Ch_W01	3
PCh2_04	Dostrzega rolę chemii w życiu codziennym oraz interdyscyplinarny charakter chemii jako nauki.	KN_Ch_K01	5
PCh2_05	Potrafi posługiwać się szkłem i sprzętem stosowanym w laboratorium.	KN_Ch_W03	4
PCh2_06	Potrafi zaprojektować i wykonać doświadczenia chemiczne.	KN_Ch_U06 KN_Ch_U08 KN_Ch_W03	3 4 4
PCh2_07	Ma świadomość odpowiedzialności za wspólnie realizowane zadania, związane z pracą zespołową oraz za bezpieczeństwo pracy w laboratorium chemicznym.	KN_Ch_U08	4

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
PCh2_fs_01	laboratory classes	15	course work	PCh2_01, PCh2_05, PCh2_06, PCh2_07	e01
PCh2_fs_02	workshop	15	course work	PCh2_01, PCh2_02, PCh2_03, PCh2_04	b02, b04, b09, d02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing*	Yes

		knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class	

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**GeoGebra**
Module code	W4-MT-S1-25-GeoG
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Przedmiot ma na celu zapoznanie studentów z wybranymi możliwościami programu GeoGebra i wstępnego przygotowania ich do wykorzystania GeoGebry w pracy dydaktycznej jako narzędzia wspomagającego rozwijanie myślenia komputacyjnego w rozwiązywaniu problemów geometrycznych oraz jako narzędzia do opracowania pomocy dydaktycznych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
GeoG_01	student zna funkcje programu GeoGebra oraz rozumie jego potencjał jako narzędzia wspierającego nauczanie i uczenie się matematyki	KN.2023_W15	3
GeoG_02	student potrafi z wykorzystaniem GeoGebry tworzyć interaktywne materiały dydaktyczne do nauczania geometrii	KN.2023_U02	3
GeoG_03	student potrafi zastosować GeoGebrę do zilustrowania problemów geometrycznych i wspierania uczniów w ich rozwiązywaniu z użyciem myślenia komputacyjnego	KN.2023_U02	3
GeoG_04	student wykazuje gotowość do wykorzystywania technologii informacyjnych w pracy nauczyciela matematyki w sposób odpowiedzialny i twórczy	KN.2023_KS04	2

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its*

		elements or constitutes its follow-up
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	laboratory classes	15	course work	GeoG_01, GeoG_02, GeoG_03, GeoG_04	a03, b02, b08, d01, d03, e01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Geometry A**
Module code	W4-MT-S1-25-GeoA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu Geometria A jest wykształcenie u słuchaczy umiejętności swobodnego posługiwania się najważniejszymi pojęciami i narzędziami geometrii klasycznej i rzutowej. Przewiduje się realizację następujących treści programowych: 1. Euklidesowe przestrzenie współrzędnych ze zwykłym iloczynem skalarnym, rzutowanie prostopadłe, miara kąta. 2. Afiniczne euklidesowe przestrzenie współrzędnych, podprzestrzenie afiniczne: proste, płaszczyzny, hiperpłaszczyzny; metryka euklidesowa, układ współrzędnych, wybrane zagadnienia geometrii elementarnej. 3. Przekształcenia afiniczne, izometrie i podobieństwa. 4.Hiperpowierzchnie stopnia 2, własności wybranych krzywych i powierzchni stopnia 2. 5. Wybrane informacje o geometriach nieeuklidesowych. 6. Elementy geometrii rzutowej, płaszczyzna i przestrzeń rzutowa.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
GeoA_1	zna i rozumie główne pojęcia i rezultaty z zakresu geometrii, zna przykłady ilustrujące dyskutowane pojęcia	K_W04 K_W05	3 3
GeoA_2	zna i rozumie główne rezultaty z zakresu geometrii afinicznej i rzutowej, zna przykłady ilustrujące dyskutowane pojęcia	K_W04 K_W05	3 3
GeoA_3	zna i rozumie główne rezultaty z zakresu geometrii euklidesowej, wie o istnieniu geometrii nieeuklidesowych, zna przykłady ilustrujące dyskutowane pojęcia	K_W04 K_W05	3 3
GeoA_4	potrafi zastosować wyznacznik i metody rozwiązywania układów równań liniowych w geometrii analitycznej	K_U01 K_U04	2 3
GeoA_5	potrafi klasyfikować krzywe i powierzchnie stożkowe posługując się wyznacznikami macierzy związanych z równaniami	K_U01	2

	tworów stopnia 2	K_U04	3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
GeoA_fs_1	lecture	30	exam	GeoA_1, GeoA_2, GeoA_3, GeoA_4, GeoA_5	a01
GeoA_fs_2	discussion classes	30	course work	GeoA_1, GeoA_2, GeoA_3, GeoA_4, GeoA_5	b04, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions*	Yes

		for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.	
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**ICT in chemistry teaching**
Module code	W4-MT-S1-24-TIKCh
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest przygotowanie studenta do efektywnego wykorzystania wybranych elementów technologii informacyjno-komunikacyjnej w nauczaniu chemii na różnych poziomach edukacyjnych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
TIKCh_01	student zna metody kształcenia wykorzystujące technologie informacyjno-komunikacyjne (TIK) znajdujące zastosowanie w nauczaniu chemii	KN.2023_W15	3
TIKCh_02	student potrafi wykorzystać poznane programy edukacyjne do wspomagania pracy własnej, a w szczególności pracy nauczyciela chemii w tym tworzenia własnych projektów w poznanych projektach edukacyjnych	KN_Ch_U04 KN_Ch_U05	5 1
TIKCh_03	student rozwija metody kształcenia i oceniania z wykorzystaniem technologii informacyjno-komunikacyjnych w nauczaniu chemii	KN_Ch_U04 KN_Ch_U07	5 2

9. Methods of conducting classes

Code	Category	Name (description)
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results*

		within the set deadline

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
TIKCh_fs_01	workshop	20	course work	TIKCh_01, TIKCh_02, TIKCh_03	c07, d01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**ICT in physics teaching**
Module code	KN-F-TIK
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	przygotowanie studenta do efektywnego wykorzystania wybranych elementów technologii informacyjno-komunikacyjnej w nauczaniu fizyki na różnych poziomach edukacyjnych
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
TIK_01	zna metody kształcenia wykorzystujące technologie informacyjno-komunikacyjne (TIK) znajdujące zastosowanie w nauczaniu fizyki	KN.2023_W15	3
TIK_02	potrafi wykorzystać poznane programy edukacyjne do wspomagania pracy własnej, a w szczególności pracy nauczyciela fizyki w tym tworzenia własnych projektów w poznanych projektach edukacyjnych	KN.2023_U05 KN_NDP_F_S1_U02 KN_NDP_F_S1_U06	4 4 4
TIK_03	rozwija metody kształcenia i oceniania z wykorzystaniem technologii informacyjno-komunikacyjnych w nauczaniu fizyki	KN.2023_KS01 KN_NDP_F_S1_K02	2 5

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution*

		to the issues presented in the lecture as well as the indication of the consequences of the proposed solution
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment

		[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
e08	Practical methods	Practice-as-research *also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
TIK_fs_01	workshop	15	course work	TIK_01, TIK_02, TIK_03	a03, b01, b02, b04, b08, b09, c02, c06, c07, d01, d02, d03, e01, e06, e07, e08

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No

c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Inorganic Chemistry**
Module code	W4-MT-S1-24-ChN1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Student zapoznaje się z systematyką związków nieorganicznych, z podziałem na tlenki, wodorki, kwasy, wodorotlenki, sole i związki amfoteryczne. Moduł przekazuje wiedzę na temat pochodzenia i rozpowszechnienia pierwiastków w skorupie ziemskiej, charakterystyki pierwiastków bloku s (wodór, litowce i berylowce), pierwiastków grup 14-18 i ich związków ze szczególnym uwzględnieniem nieorganicznych związków węgla, siarki, azotu.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ChN1_01	Zna zasady nomenklatury związków nieorganicznych.	KN_Ch_W01	3
ChN1_02	Zna pojęcia i zagadnienia chemii nieorganicznej.	KN_Ch_W01	4
ChN1_03	Zna sposoby otrzymywania związków nieorganicznych.	KN_Ch_W02	5
ChN1_04	Zna sposoby ustalania stechiometrii reakcji chemicznych z udziałem związków nieorganicznych.	KN_Ch_W01	4
ChN1_05	Analizuje właściwości pierwiastków i wybranych klas związków nieorganicznych w kontekście prawa okresowości.	KN_Ch_W01	4
ChN1_06	Przewiduje właściwości i reaktywność związków nieorganicznych w oparciu o energię jonizacji, powinowactwo elektronowe oraz elektroujemność.	KN_Ch_U03	4
ChN1_07	Opracowuje raporty i sprawozdania z zakresu pracowni laboratoryjnej.	KN_Ch_U05 KN_Ch_U06	5 3
ChN1_08	Potrafi pracować indywidualnie i w zespole realizując eksperymenty chemiczne.	KN_Ch_U08	3
ChN1_09	Potrafi samodzielne wyszukiwać informacje w literaturze w celu podnoszenia kompetencji zawodowych.	KN_Ch_K01	4
ChN1_10	Odpowiada za bezpieczeństwo pracy własnej i innych.	KN_Ch_U08	4

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
ChN1_fs_01	lecture	15	course work	ChN1_01, ChN1_02, ChN1_03, ChN1_05, ChN1_06	b01, b02, f02
ChN1_fs_02	workshop	15	course work	ChN1_01, ChN1_02, ChN1_03, ChN1_04, ChN1_06, ChN1_07, ChN1_08, ChN1_09, ChN1_10	b04, b09, e01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent*	Yes

		elements of the curriculum (as preparation for class participation)	
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Inorganic Chemistry II**
Module code	W4-MT-S1-24-ChN2
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Moduł Chemii Nieorganicznej II przekazuje wiedzę dotyczącą chemii pierwiastków bloku d (ze szczególnym uwzględnieniem reakcji utleniania i redukcji manganu, chromu, żelaza i miedzi).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ChN2_01	Zna sposoby otrzymywania wybranych związków pierwiastków bloku d.	KN_Ch_W01 KN_Ch_W02	4 4
ChN2_02	Przewiduje właściwości i reaktywność związków pierwiastków bloku d.	KN_Ch_K01 KN_Ch_U03 KN_Ch_U07 KN_Ch_W02	4 4 3 4
ChN2_03	Posiada umiejętności praktycznego wykorzystania wiedzy z zakresu chemii pierwiastków bloku d.	KN_Ch_K01 KN_Ch_U06 KN_Ch_U07 KN_Ch_U09 KN_Ch_W03	4 3 3 4 4
ChN2_04	Opracowuje sprawozdania dotyczące przeprowadzonych doświadczeń z udziałem związków nieorganicznych.	KN_Ch_U05	4
ChN2_05	Potrafi samodzielnie zaplanować i przeprowadzić reakcję chemiczną z udziałem związków nieorganicznych.	KN_Ch_K01 KN_Ch_U02 KN_Ch_U03	3 5 5

		KN_Ch_U08 KN_Ch_W03	4 4
ChN2_06	Odpowiada za bezpieczeństwo pracy własnej i innych.	KN_Ch_U08 KN_Ch_W03	5 4

9. Methods of conducting classes

Code	Category	Name (description)
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
ChN2_fs_01	workshop	30	course work	ChN2_01, ChN2_02, ChN2_03, ChN2_04, ChN2_05, ChN2_06	b02, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Interactive board**
Module code	W4-MT-S1-24-TMul
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest wyposażenie studenta w umiejętność sprawnego posługiwania się tablicą multimedialną z uwzględnieniem racjonalnego wykorzystania technologii i mediów cyfrowych. Student pozna specyfikę pracy z tablicą interaktywną i zaznajomi się z jej możliwościami. Zadaniem modułu jest również wskazanie najbardziej efektywnych sposobów wykorzystania tablicy multimedialnej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
TMul_1	Student zna kompetencje merytoryczne, dydaktyczne i wychowawcze nauczyciela, w tym potrzebę zawodowego rozwoju, także z wykorzystaniem technologii informacyjno – komunikacyjnej ,oraz dostosowywania sposobu komunikowania się do poziomu rozwoju uczniów i stymulowania aktywności poznawczej uczniów, w tym kreowania sytuacji dydaktycznych	KN.2023_W01 KN.2023_W03 KN.2023_W12	2 2 2
TMul_2	Student rozumie sposoby organizowania przestrzeni klasy szkolnej, z uwzględnieniem doboru i wykorzystania zasobów edukacyjnych, w tym elektronicznych i obcojęzycznych, edukacyjnego zastosowania mediów i technologii informacyjno-komunikacyjnej	KN.2023_U02 KN.2023_U04 KN.2023_U14	2 2 2
TMul_3	Student rozumie potrzebę wyszukiwania, adaptacji i tworzenia elektronicznych zasobów edukacyjnych i projektowania multimediów	KN_I_U02 KN_I_U06	3 3
TMul_4	Student jest gotów odpowiedzialnie i krytycznie wykorzystywać media cyfrowe oraz szanować prawa własności intelektualnej	KN.2023_KS01 KN.2023_KS03 KN.2023_KS06	3 3 3
TMul_5	Student potrafi dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne	KN.2023_U03 KN.2023_U06 KN.2023_U12	2 2 2

TMul_6	Student jest gotów do twórczego poszukiwania najlepszych rozwiązań dydaktycznych sprzyjających postępom uczniów	KN.2023_KS04	2
TMul_7	Student potrafi kreować sytuacje dydaktyczne służące aktywności i rozwojowi zainteresowań uczniów oraz popularyzacji wiedzy	KN.2023_U06 KN.2023_U07 KN.2023_U13	2 2 2

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
TMul_fs_01	workshop	15	course work	TMul_1, TMul_2, TMul_3, TMul_4, TMul_5, TMul_6, TMul_7	a03, b04, c07, d01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those*	No

		developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)	
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Algebra and Number Theory**
Module code	W4-MT-S1-25-WATL
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu ,,Wstęp do algebry i teorii liczb" jest przygotowanie słuchacza do studiowania przedmiotów i zagadnień z zakresu szeroko pojętej algebry oraz teorii liczb. W szczególności moduł ten wprowadza główne pojęcia i zapoznaje studenta z klasycznymi strukturami algebraicznymi niezbędnymi do zrozumienia kursów algebry liniowej i algebry wyższej. W ramach kursu przewiduje się realizację następujących treści programowych: 1. Arytmetyka pierścienia liczb całkowitych, dzielenie z resztą, NWD i NWW, liniowe równania diofantyczne. 2. Klasyczne struktury algebraiczne: grupa, pierścień i ciało, arytmetyka modularna, liczby zespolone, wielomiany jednej zmiennej. 3. Kongruencje. 4. Rachunek macierzowy i jego interpretacja w klasycznej geometrii analitycznej. 5. Rozwiązywanie układów równań liniowych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WATL_1	zna główne pojęcia z zakresu algebry i teorii liczb	K_W04	2
WATL_2	potrafi posługiwać się pojęciami z zakresu algebry i teorii liczb w mowie i piśmie	K_U01 K_U04	2 2
WATL_3	zna schematy dowodów kluczowych twierdzeń poznanych na wykładzie	K_W02 K_W03	2 2
WATL_4	zna pojęcie ciała i przykłady ciał	K_W04	2
WATL_5	potrafi wykonywać działania w ciałach skończonych i ciele liczb zespolonych, potrafi posługiwać się arytmetyką modularną	K_U04	3
WATL_6	potrafi rozwiązywać układy równań liniowych wielu zmiennych, posługuje się rachunkiem macierzowym, potrafi obliczać rząd i wyznacznik macierzy oraz wartości i wektory własne	K_U04	3

WATL_7	potrafi zastosować poznane narzędzia algebraiczne i teorio-liczbowe w sytuacjach problemowych	K_U04	2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WATL_fs_1	lecture	30	course work	WATL_1, WATL_2, WATL_3, WATL_4, WATL_5, WATL_6, WATL_7	a01
WATL_fs_2	discussion classes	30	course work	WATL_1, WATL_2, WATL_3, WATL_4, WATL_5, WATL_6, WATL_7	e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as*	Yes

		well as from the notes or other materials/artifacts made in class	
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Computational Mathematics A**
Module code	W4-MT-S1-25-WMObA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest poznanie i zrozumienie klasycznych wyników z zakresu matematyki obliczeniowej oraz zasad działania programów typu CAS (ang. Computer Algebra System): reprezentacji obiektów matematycznych, symbolicznych oraz numerycznych algorytmów obliczeniowych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WMObA_1	Student zna zasady działania programów matematycznych oraz ich ograniczenia.	K_W06 K_W07	4 1
WMObA_2	Student posiada zaawansowaną wiedzę na temat reprezentacji fundamentalnych obiektów matematycznych (takich jak: liczby całkowite, liczby zmiennoprzecinkowe, macierzy, wielomiany) oraz klasycznych algorytmów pozwalających na nich operować.	K_W06 K_W07	2 1
WMObA_3	Student zna pojęcie błędów zaokrągleń i reprezentacji dla liczb zmiennoprzecinkowych oraz ma świadomość różnych rodzajów błędów występujących w obliczeniach numerycznych.	K_W06 K_W07	1 1
WMObA_4	Student zna w stopniu zaawansowanym klasyczne algorytmy używane do rozwiązywania równań (i układów równań) wielomianowych.	K_W06 K_W07	2 1
WMObA_5	Student potrafi rozwiązywać równania wielomianowe jednej zmiennej oraz układy równań wielomianowych dwóch i więcej zmiennych.	K_U03 K_U04 K_U07 K_U08 K_U09	1 1 4 1 1

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e04	Practical methods	Project scheduling *proceeding according to the steps proposed within a specific methodology for the completion of a task; e.g., identifying project objectives, determining the result, identifying strengths, limitations, opportunities and threats (SWOT), establishing a schedule of activities, assessing resources, establishing an implementation plan; the initial diagnosis; the reassessment of assumptions; the process of preparing the practical implementation of a project*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WMObA_fs_1	lecture	30	exam	WMObA_1, WMObA_2, WMObA_3, WMObA_4, WMObA_5	a01, a05
WMObA_fs_2	laboratory classes	30	course work	WMObA_1, WMObA_2, WMObA_3, WMObA_4, WMObA_5	d01, e04

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation*	No

		of tasks resulting from or necessary for class participation	
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Differential Equations**
Module code	W4-MT-S1-25-WRRo
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Moduł Wstęp do równań różniczkowych ma na celu wykształcenie umiejętności rozwiązywania równań różniczkowych oraz zapewnić znajomość podstaw teoretycznych tej teorii. Realizowane będą następujące treści programowe: 1. Pojęcie równania różniczkowego, jego rozwiązania oraz interpretacja geometryczna. 2. Modele przyrodnicze prowadzące do równań różniczkowych zwyczajnych. 3. Równania o zmiennych rozdzielonych, równanie zupełne, równanie liniowe i równanie Bernoulliego. 4. Istnienie i jednoznaczność rozwiązań - informacja o klasycznych twierdzeniach; metoda kolejnych przybliżeń. 5. Układy liniowych równań różniczkowych zwyczajnych pierwszego rzędu. 6. Równania liniowe wyższych rzędów. 7. Informacja o innych własnościach rozwiązań równań różniczkowych zwyczajnych; ograniczoności oraz zachowaniu przy dużych czasach.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WRRo_1	Zna i rozumie pojęcie równania różniczkowego, jego rozwiązania oraz przykłady zagadnień prowadzących do równań różniczkowych zwyczajnych	K_K01 K_W01 K_W02 K_W04	1 1 1 1
WRRo_2	Zna najważniejsze klasy równań całkowalnych pierwszego rzędu	K_W02 K_W04 K_W05 K_W06	1 1 2 1
WRRo_3	Potrafi rozwiązywać równania wybranych typów (równania o zmiennych rozdzielonych, równania jednorodne, równania liniowe, równania zupełne oraz pewne równania do nich sprowadzalne)	K_U01	1

		K_U05	5
WRRo_4	Potrafi rozwiązywać równania liniowe wyższych rzędów i układy liniowe o stałych współczynnikach	K_U01 K_U05	1 5
WRRo_5	Zna, rozumie oraz potrafi sformułować klasyczne twierdzenia dotyczące istnienia i jednoznaczności rozwiązań równań różniczkowych zwyczajnych	K_U05 K_U13 K_W02 K_W03 K_W04 K_W06	5 1 1 2 2 1

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WRRo_fs_1	lecture	30	exam	WRRo_1, WRRo_2, WRRo_3, WRRo_4, WRRo_5	a01
WRRo_fs_2	discussion classes	30	course work	WRRo_1, WRRo_2, WRRo_3, WRRo_4, WRRo_5	b08, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation*	Yes

		of tasks resulting from or necessary for class participation	
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	No
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Differential Equations A**
Module code	W4-MT-S1-25-WRRoA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Moduł ma na celu zaznajomienie z aspektami teorii i metod równań różniczkowych zwyczajnych, leżącymi u podstaw rozległej tematyki równań różniczkowych. Ramowy zakres modułu obejmuje następujące tematy: 1. Pojęcie równania różniczkowego, jego rozwiązania, interpretacja geometryczna; przykładowe modele prowadzące do równań różniczkowych zwyczajnych. 2. Klasy równań efektywnie całkowalnych; wykorzystanie znanych twierdzeń analizy do dowodów istnienia i jednoznaczności rozwiązania zagadnienia początkowego dla równania o zmiennych rozdzielonych, równania liniowego, równania zupełnego. 3. Układy liniowych równań różniczkowych zwyczajnych pierwszego rzędu; twierdzenie o przestrzeni rozwiązań układów jednorodnych, układ fundamentalny rozwiązań, macierz rozwiązań, wrońskian. 4. Równania liniowe wyższych rzędów. 5. O rozwiązaniach stabilnych, asymptotycznie stabilnych oraz stabilności i asymptotycznej stabilności rozwiązań układów liniowych. 6. Informacje o klasycznych twierdzeniach dotyczących istnienia/jednoznaczności rozwiązań w teorii równań/układów różniczkowych zwyczajnych (Twierdzenie Peano, Twierdzenie Picarda, Twierdzenia Cauchy'ego i Kowalewskiej) oraz łączących się z nimi metodach przybliżonych (schemat Eulera, ciąg kolejnych przybliżeń, zastosowanie szeregów potęgowych).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WRRoA_1	Prezentuje gotowość do studiowania zagadnień równań różniczkowych oraz aktywność w rozwiązywaniu zadań.	K_K01	2
WRRoA_2	Zna najważniejsze klasy równań całkowalnych.	K_W04 K_W05	2 2
WRRoA_3	Potrafi rozwiązywać wybrane typy równań różniczkowych.	K_U03 K_U05	3 5
WRRoA_4	Zna i rozumie najważniejsze pojęcia i twierdzenia równań różniczkowych zwyczajnych obejmowane modułem.	K_W02	1

		K_W03 K_W04 K_W05	1 2 1
WRRoA_5	Potrafi efektywnie wyrażać klasyczne pojęcia i twierdzenia równań różniczkowych zwyczajnych.	K_U01	2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WRRoA_fs_1	lecture	30	exam	WRRoA_1, WRRoA_2, WRRoA_3, WRRoA_4, WRRoA_5	a01
WRRoA_fs_2	discussion classes	30	course work	WRRoA_1, WRRoA_2, WRRoA_3, WRRoA_4, WRRoA_5	b08, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization	Verification / adjustment / discussion of syllabus provisions	No

	of classes	*consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Mathematical Analysis**
Module code	W4-MT-S1-25-WAMa
Number of the ECTS credits	11
Language of instruction	Polish
Purpose and description of the content of education	Moduł Wstęp do analizy matematycznej ma na celu wykształcenie umiejętności swobodnego posługiwania się klasycznymi pojęciami i narzędziami z zakresu fundamentów analizy matematycznej. Przewiduje się realizację następujących treści programowych: 1. Wprowadzenie. Pojęcie funkcji. Zasadnicze własności funkcji. Liczby rzeczywiste i zespolone. Kres dolny i górny. 2. Ciągi i szeregi. Granica ciągu. Własności ciągów zbieżnych i granic. Ciągi monotoniczne i ich zbieżność. Liczba e. Twierdzenie Bolzano-Weierstrassa. Warunek Cauchy'ego. Granice ekstremalne. Pojęcie szeregu i jego sumy. Kryteria zbieżności szeregów. Zbieżność bezwzględna. Iloczyn Cauchy'ego szeregów. 3. Przestrzenie metryczne. Metryka i przestrzeń metryczna. Przykłady metryk. Kluczowe pojęcia topologiczne. Zwartość, spójność, zupełność. 4. Granica i ciągłość funkcji. Definicje Heinego i Cauchy'ego granicy funkcji. Własności granic funkcji. Ciągłość funkcji. Własności funkcji ciągłych. Główne funkcje elementarne i ich własności. Jednostajna ciągłość funkcji. 5. Rachunek różniczkowy funkcji zmiennej rzeczywistej. Pochodna funkcji. Reguły różniczkowania. Twierdzenia o wartości średniej. Wzór Taylora. Reguły de l'Hospitala. Badanie przebiegu zmienności funkcji.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WAMa_1	zna główne pojęcia i twierdzenia z poznanych działów analizy matematycznej	K_W04	1
WAMa_2	zna przykłady zarówno ilustrujące konkretne pojęcia z omawianych działów analizy matematycznej, jak i pozwalające obalić błędne hipotezy lub nieuprawnione rozumowania	K_W03 K_W05	1 1
WAMa_3	zna i rozumie w zaawansowanym stopniu klasyczne fakty z zakresu rachunku różniczkowego i całkowego funkcji jednej i wielu zmiennych, a także wykorzystywane w nim inne gałęzie matematyki	K_W04	1
WAMa_4	potrafi w sposób zrozumiały, w mowie i na piśmie, przedstawiać poprawne rozumowania matematyczne, formułować twierdzenia i definicje z omawianych działów analizy matematycznej	K_U01	1
WAMa_5	potrafi definiować funkcje, także z wykorzystaniem przejść granicznych, i opisywać ich własności		

		K_U03	1
WAMa_6	posługuje się w różnych kontekstach pojęciem zbieżności i granicy; potrafi - na prostym i średnim poziomie trudności - obliczać granice ciągów i funkcji, badać zbieżność bezwzględną i warunkową szeregów	K_U01 K_U03	1 1
WAMa_7	potrafi interpretować i wyjaśniać zależności funkcyjne, ujęte w postaci wzorów, tabel, wykresów, schematów i stosować je w zagadnieniach praktycznych	K_U01 K_U03	1 1
WAMa_8	umie wykorzystać twierdzenia i metody rachunku różniczkowego funkcji jednej zmiennej w zagadnieniach związanych z optymalizacją, poszukiwaniem ekstremów lokalnych i globalnych oraz badaniem przebiegu funkcji, podając precyzyjne i ścisłe uzasadnienia poprawności swoich rozumowań	K_U01 K_U03	1 2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WAMa_fs_1	lecture	60	exam	WAMa_1, WAMa_2, WAMa_3, WAMa_4, WAMa_5, WAMa_6, WAMa_7, WAMa_8	a01
WAM_fs_2	discussion classes	60	course work	WAMa_1, WAMa_2, WAMa_3, WAMa_4, WAMa_5, WAMa_6, WAMa_7, WAMa_8	b08, d02, d04, e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Mathematics**
Module code	W4-MT-S1-25-WMat
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	The aim of the classes is to familiarize students with concepts in the field of mathematical logic and the foundations of mathematics. The module will cover the following content: 1. The language of classical propositional logic, Boolean semantics, predicate logic. 2. Algebra of sets. 3. Relations -- equivalence and order . 4. Functions. 5. Cardinality of sets.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WMat_1	student dobrze rozumie przedstawioną na zajęciach teorię i znaczenie dowodu w matematyce, a także pojęcie istotności założeń, zna podstawowe przykłady zarówno ilustrujące konkretne pojęcia matematyczne omawiane podczas zajęć, jak i pozwalające obalić błędne hipotezy lub nieuprawnione rozumowania	K_W03 K_W05	3 1
WMat_2	student zna wybrane pojęcia i metody logiki matematycznej, teorii mnogości i matematyki dyskretnej zawarte w podstawach innych dyscyplin matematyki	K_W04	2
WMat_3	student potrafi w sposób zrozumiały w mowie i na piśmie, przedstawiać poprawne rozumowania matematyczne, formułować twierdzenia i definicje z zakresu tematyki modułu	K_U01	2
WMat_4	student potrafi posługiwać się językiem teorii mnogości, interpretując zagadnienia z różnych obszarów matematyki, potrafi posługiwać się rachunkiem zdań i predykatów oraz stosować język logiki do precyzyjnego opisu, modelowania i formalizacji problemów matematycznych pochodzących z różnych działów matematyki	K_U02	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WMat_fs_1	lecture	30	exam	WMat_1, WMat_2, WMat_3, WMat_4	a01, b02
WMat_fs_2	discussion classes	30	course work	WMat_1, WMat_2, WMat_3, WMat_4	a05, d02, d04, e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes

c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Operating Systems**
Module code	W4-MT-S1-24-WSOp
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest zapoznanie studentów z głównymi koncepcjami, funkcjami i strukturą systemów operacyjnych, ze szczególnym uwzględnieniem zarządzania zasobami komputera, organizacji pamięci i procesów. Przewiduje się realizację następujących zagadnień: Zaawansowane informacje o sprzęcie komputerowym. Zasady bezpieczeństwa w systemach informatycznych. Zasady BHP przy obsłudze sprzętu komputerowego. Różne definicje systemu operacyjnego, zadania systemów operacyjnych, cele powstania różnych systemów operacyjnych, usługi wykonywane przez systemy operacyjne, kształtowanie się systemów operacyjnych. Klasyfikacja systemów operacyjnych. Przegląd najpopularniejszych systemów operacyjnych. Różnice pomiędzy procesem, a programem. Maszyny wirtualne. Zalety i wady wirtualizacji. Różne wersje systemów z rodziny Windows, minimalne wymagania sprzętowe, etapy instalacji systemu. Rodzaje kont użytkowników oraz sposoby ich zakładania. Budowa dysku, podziały na partycje, konfiguracja dysku, przydziały dysku, systemy plików w Windows. Tworzenie kopii zapasowych. Główne polecenia konsoli.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WSOp_01	student zna funkcje głównych elementów komputera i urządzeń zewnętrznych	KN_I_W01	5
WSOp_02	student zna minimalne wymagania systemowe systemów operacyjnych z rodziny Windows	KN_I_W01	3
WSOp_02a	student potrafi korzystać z maszyn wirtualnych, zainstalować system operacyjny (dowolny) w wirtualnym i rzeczywistym środowisku	KN_I_U01	4
WSOp_03	student potrafi skonfigurować konta użytkownika lokalnego i konta grup użytkowników oraz ustawić mechanizmy ochrony kont	KN_I_U01	4
WSOp_04	student zna budowę dysku oraz potrafi omówić różne systemy plików a także potrafi udostępnić pliki i foldery innym użytkownikom oraz korzystać z mechanizmów przydziałów dyskowych	KN_I_U01 KN_I_U02	5 2

		KN_I_W01	3
WSOp_05	student wykazuje gotowość do samodzielnego pogłębiania wiedzy z zakresu systemów operacyjnych i ich aktualizacji	K_K01 KN_I_K02	2 3
WSOp_07	Student potrafi stworzyć kopię zapasową plików i folderów oraz odzyskać wykorzystując ją dane; na narzędzia do odzyskiwania systemów; Zna i potrafi korzystać z podstawowych poleceń konsoli w tym poleceń służących do diagnostyki połączenia sieciowego	KN_I_U01 KN_I_W02	4 4

9. Methods of conducting classes

Code	Category	Name (description)
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WSOp_fs_1	laboratory classes	15	course work	WSOp_01, WSOp_02, WSOp_02a, WSOp_03, WSOp_04, WSOp_05, WSOp_07	e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to Probability Theory A**
Module code	W4-MT-S1-25-WRPrA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Moduł wstęp do rachunku prawdopodobieństwa A ma na celu wykształcenie umiejętności swobodnego posługiwania się pojęciami i narzędziami z zakresu teorii prawdopodobieństwa. Przewiduje się realizację następujących treści programowych: 1. Elementy kombinatoryki. 2. Aksjomatyka przestrzeni probabilistycznej. 3. Modele prawdopodobieństwa klasycznego i geometrycznego. 4. Prawdopodobieństwo warunkowe, prawdopodobieństwo całkowite, wzór Bayesa. 5. Niezależność zdarzeń i klas zdarzeń. Lemat Borela-Cantellego i prawo 0-1 Kołmogorowa. 6. Zmienne losowe, ich rozkłady, dystrybuanty i gęstości. 7. Charakterystyki liczbowe zmiennych losowych (wartość oczekiwana i wariancja). 8. Funkcja tworząca. 9. Nierówności Markowa, Czebyszewa-Bienayme i Holdera. 10. Wektory losowe, rozkłady brzegowe i niezależność zmiennych losowych. 11. Funkcja charakterystyczna.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-AMa2A] Mathematical Analysis II A

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WRPrA_1	Zna główne schematy kombinatoryczne i wie, jak je wykorzystać do opisu typowych problemów z zakresu kombinatoryki (np. wyznaczania ilości sekwencji elementów spełniających zadane warunki).	K_W03 K_W04	2 4
WRPrA_10	Potrafi badać niezależność zmiennych losowych oraz wykorzystać ją w budowie modeli probabilistycznych.	K_U01 K_U03 K_U11	2 3 5

WRPrA_11	Potrafi użyć formalizmu matematycznego do budowy i analizy prostych modeli probabilistycznych.	K_U01 K_U02	3 2
WRPrA_12	Potrafi w sposób zrozumiały, w mowie i na piśmie, przedstawiać poprawne rozumowania matematyczne oraz formułować twierdzenia i definicje z zakresu teorii prawdopodobieństwa.	K_U01 K_U02 K_U13	5 2 2
WRPrA_2	Zna modele prawdopodobieństwa klasycznego i geometrycznego, a także ma świadomość, w jakich sytuacjach znajdują one zastosowanie.	K_W02 K_W04 K_W05	1 3 2
WRPrA_3	Zna pojęcie prawdopodobieństwa warunkowego oraz wzór na prawdopodobieństwo całkowite i wzór Bayesa.	K_W03 K_W04	2 3
WRPrA_4	Zna pojęcie wzajemnej niezależności zdarzeń oraz ich rodzin, jak również przykłady i fakty związane z tymi pojęciami.	K_W04 K_W05	3 2
WRPrA_5	Wie, czym jest miara probabilistyczna i zna jej własności. Zna pojęcie przestrzeni probabilistycznej i ma świadomość, że za jej pomocą można opisywać doświadczenia losowe w sposób formalny, a także zna przykłady takich opisów.	K_W02 K_W04 K_W05	2 3 3
WRPrA_6	Zna pojęcie rozkładu zmiennej losowej (jedno- i wielowymiarowej), jego dystrybuanty i funkcji charakterystycznej oraz pojęcia funkcji masy rozkładu dyskretnego i gęstości rozkładu ciągłego. Zna związki między tymi pojęciami oraz wie, jak je wykorzystać w porządany sposób (np. do wyznaczenia danej charakterystyki rozkładu na podstawie innej).	K_W02 K_W04 K_W05	2 4 1
WRPrA_7	Zna różne przykłady dyskretnych i ciągłych rozkładów prawdopodobieństwa. Wie, jakie są praktyczne zastosowania najważniejszych rozkładów.	K_W01 K_W05	1 5
WRPrA_8	Wie, czym jest wartość oczekiwana i wariancja zmiennej losowej, rozumie intuicje stojące za tymi pojęciam, a także zna ich najważniejsze własności oraz związane z nimi nierówności.	K_W04	3
WRPrA_9	Potrafi wyznaczać rozkłady borelowskich przekształceń zmiennych losowych i wektorów losowych oraz rozkłady brzegowe tych ostatnich.	K_U03 K_U09 K_U11	3 3 5

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*

b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
WRPrA_fs_1	lecture	30	exam	WRPrA_10, WRPrA_11, WRPrA_12, WRPrA_3, WRPrA_4, WRPrA_5, WRPrA_6, WRPrA_7, WRPrA_8	a01, a05, b02, b04
WRPrA_fs_2	discussion classes	30	course work	WRPrA_1, WRPrA_10, WRPrA_11, WRPrA_12, WRPrA_2, WRPrA_3, WRPrA_4, WRPrA_5, WRPrA_6, WRPrA_7, WRPrA_8, WRPrA_9	a05, b04, d02, e01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent*	No

		elements of the curriculum (as preparation for class participation)	
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	No
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Introduction to statistics**
Module code	W4-MT-S1-25-PSta
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu "Wstęp do statystyki" jest zapoznanie studentów z zaawansowanymi zagadnieniami statystyki opisowej oraz wprowadzenie ich w zaawansowaną teorię związaną ze statystycznymi metodami analizy danych. Ma także na celu rozwijanie umiejętności gromadzenia, opracowywania i interpretowania danych statystycznych, a także wykorzystywania narzędzi informatycznych, takich jak arkusz kalkulacyjny, do obliczeń i tworzenia graficznych prezentacji wyników. Studenci nauczą się analizować współzależności między zmiennymi, stosować miary statystyczne w opisie próby, a także przeprowadzać testowanie hipotez oraz estymację punktową i przedziałową. Przewiduje się realizację następujących treści programowych. 1. Pojęcia statystyki opisowej (w tym populacja generalna, próba losowa, cecha statystyczna). 2. Organizacja badań statystycznych: gromadzenie danych, opracowanie i graficzna prezentacja danych, konstrukcja szeregów statystycznych. 3. Opis próby: miary położenia (klasyczne i pozycyjne), miary zmienności, miary asymetrii, miary koncentracji. 4. Wyliczanie i graficzna prezentacja statystyk opisowych z wykorzystaniem narzędzi informatycznych, takich jak arkusz kalkulacyjny. 5. Analiza współzależności zmiennych mierzalnych: analiza korelacji i regresji liniowej. 6. Analiza współzależności cech niemierzalnych: rangowy współczynnik korelacji. 7. Najważniejsze rozkłady wykorzystywane w statystyce. 8. Model statystyczny i statystyki. 9. Estymacja punktowa i przedziałowa. Przedziały ufności dla wartości średniej, wariancji i wskaźnika struktury. Wyznaczanie niezbędnej liczby pomiarów do próby. 10. Testowanie hipotez statystycznych. Hipotezy dotyczące wartości średniej, wariancji i wskaźnika struktury.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PSta_1	zna i rozumie w zaawansowanym stopniu pojęcia, twierdzenia, techniki dowodowe oraz metody opisu problemów z zakresu statystyki, w szczególności statystyki opisowej, analizy współzależności zmiennych mierzalnych i niemierzalnych oraz z zakresu wnioskowania statystycznego (przedziały ufności i testowanie hipotez statystycznych)	K_W04	1
PSta_2	zna przykłady ilustrujące wybrane pojęcia statystyczne, a także przykłady błędnych interpretacji wyników badań oraz	K_W05	3

	nieuprawnionych wnioskowań statystycznych		
PSta_3	potrafi dobrać i stosować właściwe narzędzia informatyczne, w tym arkusz kalkulacyjny, do gromadzenia, opracowania i prezentacji danych, wyliczania i graficznej prezentacji statystyk opisowych dotyczących zagadnień z różnych dziedzin nauki	K_U07	4
PSta_4	potrafi dobrać i zastosować odpowiednie metody statystyczne do opisu próby za pomocą miar statystyki opisowej oraz do analizy współzależności zmiennych mierzalnych i niemierzalnych, wykorzystując wybrane oprogramowanie, takie jak arkusz kalkulacyjny	K_U12	4
PSta_5	potrafi przedstawić poprawne wnioskowania statystyczne wykorzystując przedziały ufności i hipotezy statystyczne dla wartości średniej, wariancji i wskaźnika struktury oraz budować i analizować model regresji liniowej	K_U01	2
PSta_6	jest gotów do stosowania metod statystycznych w rozwiązywaniu problemów praktycznych i społecznych oraz do podejmowania działań na rzecz wykorzystywania wyników analiz w służbie interesu publicznego	K_K03	3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PSta_fs_1	lecture	30	exam	PSta_1, PSta_2	a01, f02
PSta_fs_2	laboratory classes	30	course work	PSta_3, PSta_4, PSta_5, PSta_6	d01, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the*	Yes

		range of activities indicated in it as required for full participation in classes	
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**IT at school**
Module code	W4-MT-S1-24-ISzk
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem zajęć jest: *) powtórzenie oraz rozszerzenie wiedzy i umiejętności ze szkoły ponadpodstawowej z zakresu posługiwania się edytorem tekstu, arkuszem kalkulacyjnym oraz programem do prezentacji multimedialnej; *) zapoznanie studentów z programowaniem w wybranych językach wizualnych na poziomie, który umożliwi realizację podstawy programowej w szkole podstawowej; *) zapoznanie z elementami języka HTML; *) zapoznanie z oprogramowaniem przydatnym w pracy nauczyciela przedmiotowego i wychowawcy; *) zapoznanie z możliwościami Microsoft Teams i Google Classroom w organizacji procesu edukacji i przekazywania wiedzy.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ISzk_01	student zna programy do przetwarzania tekstów i analizy danych	KN_I_W06	5
ISzk_02	student posiada zaawansowane umiejętności przetwarzania tekstów, (współ-)tworzy i udostępnia dokumenty w sieci	KN_I_U02 KN_I_U08	4 4
ISzk_03	student posiada zaawansowane umiejętności wykorzystywania arkuszy kalkulacyjnych	KN_I_U08 KN_I_U09	4 3
ISzk_04	student posiada zaawansowane umiejętności tworzenia prezentacji	KN_I_U07 KN_I_U09	5 4
ISzk_05	student zna środowisko programowania w wybranych językach wizualnych oraz typy zmiennych i struktur danych dostępne w języku a także polecenia i konstrukcje danego języka	KN_I_W03 KN_I_W04	3 4
ISzk_06	student projektuje, tworzy, zapisuje i testuje oprogramowanie sterujące obiektem na ekranie komputera	KN_I_U03	4

		KN_I_U04	4
ISzk_07	student programuje wykorzystaniem struktur danych, procedur (z parametrem i bez) oraz implementuje przykładowe algorytmy objęte podstawą programową szkoły podstawowej	KN_I_U03 KN_I_U04	3 4
ISzk_08	student posiada wiedzę w zakresie tworzenia stron internetowych	KN_I_W06	4
ISzk_09	student tworzy stronę internetową zgodnie ze standardami	KN_I_U10	5
ISzk_10	student potrafi wykorzystać poznane programy edukacyjne do wspomagania pracy własnej oraz do tworzenia przestrzeni edukacyjnej i komunikacji z uczniami	KN.2023_U02 KN_I_U02 KN_I_U09	3 3 3
ISzk_11	student potrafi stworzyć własne projekty w poznanych programach edukacyjnych.	KN_I_U09 KN_I_U11	4 3
ISzk_12	student wyszukuje w sieci potrzebne informacje i zasoby, ocenia ich przydatność oraz wykorzystuje w rozwiązywanych problemach	KN_I_W07	4
ISzk_13	student posiada wiedzę dotyczącą zagadnień prawnych i etycznych związanych z informatyką.	KN_I_W09	4
ISzk_14	student stosuje zasady bezpieczeństwa i higieny pracy w pracowni komputerowej	KN_I_U12	5

9. Methods of conducting classes

Code	Category	Name (description)
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	laboratory classes	45	course work	ISzk_01, ISzk_02, ISzk_03, ISzk_04, ISzk_05, ISzk_06, ISzk_07, ISzk_08, ISzk_09, ISzk_10, ISzk_11, ISzk_12, ISzk_13, ISzk_14	b08, c06, d01, e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Emisja głosu**
Module code	KN-2025-EG
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Moduł obejmuje treści związane z budową i działaniem narządu mowy, prawidłowym posługiwaniem się głosem w zawodzie nauczyciela oraz analizą zjawisk fizjologicznych zachodzących w trakcie procesu fonacyjnego. Celem zajęć jest zapoznanie z podstawowymi mechanizmami usprawniania głosowego obejmującymi kształcenie właściwej postawy fonacyjnej i umiejętności kontroli głosu w oparciu o walory czuciowe i słuchowe, zapoznanie z zasadami profilaktyki i higieny głosu.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EG_01	student/studentka zna i rozumie znaczenie języka jako narzędzia pracy nauczyciela: problematykę pracy z uczniami z ograniczoną znajomością języka polskiego lub zaburzeniami komunikacji językowej, a także praktyczne aspekty wystąpień publicznych – poprawność językową, etykę języka oraz zagadnienia związane z emisją głosu – budowę, działanie i ochronę narządu mowy i zasady emisji głosu (C.W7)	KN.2023_W12 KN.2023_W13	5 5
EG_02	student/studentka potrafi posługiwać się zgodnie z zasadami aparatem emisji głosu (C.U7)	KN.2023_U16	5
EG_03	student/studentka potrafi poprawnie posługiwać się językiem polskim (C.U8)	KN.2023_U15	5
EG_04	student/studentka jest gotów/gotowa do skutecznego korygowania swoich błędów językowych i doskonalenia aparatu emisji głosu (C.K2)	KN.2023_U16	5

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*

c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	practical classes	30	course work	EG_01, EG_02, EG_03, EG_04	a03, c06, c07, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/	Yes

		examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Pedagogika 1**
Module code	KN-2023-SS-ZIN-PE1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	W ramach modułu realizowane są treści z zakresu pedagogiki niezbędne do uzyskania ogólnego przygotowania psychologiczno-pedagogicznego (zgodnie z wytycznymi zawartymi w Obwieszczeniu Ministra Edukacji i Nauki z dnia 6 kwietnia 2021 r.).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ZIN-PE1_01	Zna i rozumie system oświaty: organizację i funkcjonowanie systemu oświaty, podstawowe zagadnienia prawa oświatowego, krajowe i międzynarodowe regulacje dotyczące praw człowieka, dziecka, ucznia oraz osób z niepełnosprawnościami, znaczenie pozycji szkoły jako instytucji edukacyjnej, funkcje i cele edukacji szkolnej, modele współczesnej szkoły, pojęcie ukrytego programu szkoły, alternatywne formy edukacji, zagadnienie prawa wewnątrzszkolnego, podstawę programową w kontekście programu nauczania oraz działania wychowawczo-profilaktyczne, tematykę oceny jakości działalności szkoły lub placówki systemu oświaty.	KN.2023_W01 KN.2023_W08 KN.2023_W14	2 3 3
ZIN-PE1_02	Zna i rozumie wychowanie w kontekście rozwoju: ontologiczne, aksjologiczne i antropologiczne podstawy wychowania; istotę i funkcje wychowania oraz proces wychowania, jego strukturę, właściwości i dynamikę; pomoc psychologiczno-pedagogiczną w szkole – regulacje prawne, formy i zasady udzielania wsparcia w placówkach systemu oświaty, a także znaczenie współpracy rodziny ucznia i szkoły oraz szkoły ze środowiskiem pozaszkolnym.	KN.2023_W01 KN.2023_W02 KN.2023_W03 KN.2023_W05 KN.2023_W06 KN.2023_W09	4 3 3 4 4 4
ZIN-PE1_03	Zna i rozumie zasady pracy opiekuńczo-wychowawczej nauczyciela: obowiązki nauczyciela jako wychowawcy klasy, metodykę pracy wychowawczej, program pracy wychowawczej, style kierowania klasą, ład i dyscyplinę, poszanowanie godności dziecka, ucznia lub wychowanka, różnicowanie, indywidualizację i personalizację pracy z uczniami, funkcjonowanie klasy szkolnej jako grupy społecznej, procesy społeczne w klasie, rozwiązywanie konfliktów w klasie lub grupie wychowawczej, animowanie życia społeczno-kulturalnego klasy, wspieranie samorządności i	KN.2023_W04 KN.2023_W06 KN.2023_W10	4 3 4

	autonomii uczniów, rozwijanie u dzieci, uczniów lub wychowanków kompetencji komunikacyjnych i umiejętności społecznych niezbędnych do nawiązywania poprawnych relacji; pojęcia integracji i inkluzji; sytuację dziecka z niepełnosprawnością fizyczną i intelektualną w szkole ogólnodostępnej, problemy dzieci z zaburzeniami ze spektrum autyzmu i ich funkcjonowanie, problemy dzieci zaniedbanych i pozbawionych opieki oraz szkolną sytuację dzieci z doświadczeniem migracyjnym; problematykę dziecka w sytuacji kryzysowej lub traumatycznej; zagrożenia dzieci i młodzieży: zjawiska agresji i przemocy, w tym agresji elektronicznej, oraz uzależnień, w tym od środków psychoaktywnych i komputera, a także zagadnienia związane z grupami nieformalnymi, podkulturami młodzieżowymi i sektami.		
ZIN-PE1_04	Zna i rozumie sytuację uczniów ze specjalnymi potrzebami edukacyjnymi: specjalne potrzeby edukacyjne uczniów i ich uwarunkowania (zakres diagnozy funkcjonalnej, metody i narzędzia stosowane w diagnozie), konieczność dostosowywania procesu kształcenia do specjalnych potrzeb edukacyjnych uczniów (projektowanie wsparcia, konstruowanie indywidualnych programów) oraz tematykę oceny skuteczności wsparcia uczniów ze specjalnymi potrzebami edukacyjnymi;	KN.2023_W05 KN.2023_W07 KN.2023_W10 KN.2023_W12 KN.2023_W15	4 4 3 4 2
ZIN-PE1_05	Zna i rozumie zasady pracy z uczniem z trudnościami w uczeniu się; przyczyny i przejawy trudności w uczeniu się, zapobieganie trudnościom w uczeniu się i ich wczesne wykrywanie, specyficzne trudności w uczeniu się – dysleksja, dysgrafia, dysortografia i dyskalkulia oraz trudności w uczeniu się wynikające z dysfunkcji sfery percepcyjno-motorycznej oraz zaburzeń rozwoju zdolności, w tym językowych i arytmetycznych, i sposoby ich przezwyciężania; zasady dokonywania diagnozy nauczycielskiej i techniki diagnostyczne w pedagogice.	KN.2023_W06 KN.2023_W09 KN.2023_W11 KN.2023_W14	4 4 5 3
ZIN-PE1_06	Potrafi formułować oceny etyczne związane z wykonywaniem zawodu nauczyciela.	KN.2023_U06 KN.2023_U08 KN.2023_U09 KN.2023_U10	3 3 4 3
ZIN-PE1_07	Potrafi rozpoznawać sytuację zagrożeń i uzależnień uczniów.	KN.2023_U01 KN.2023_U02 KN.2023_U03 KN.2023_U04 KN.2023_U05 KN.2023_U06 KN.2023_U09 KN.2023_U11 KN.2023_U12	3 4 4 4 4 5 4 4 4
ZIN-PE1_08	Jest gotów do okazywania empatii uczniom oraz zapewniania im wsparcia i pomocy.	KN.2023_KS02 KN.2023_KS03 KN.2023_KS04	4 4 4
ZIN-PE1_09	Jest gotów do profesjonalnego rozwiązywania konfliktów w klasie szkolnej lub grupie wychowawczej.	KN.2023_KS01 KN.2023_KS02 KN.2023_KS03	4 4 4

		KN.2023_KS05 KN.2023_KS06	3 5
ZIN-PE1_10	Jest gotów do samodzielnego pogłębiania wiedzy pedagogicznej.	KN.2023_KS01	4

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	lecture	15	course work	ZIN-PE1_01, ZIN-PE1_02, ZIN-PE1_03, ZIN-PE1_04, ZIN-PE1_05, ZIN-PE1_06, ZIN-PE1_07, ZIN-PE1_08, ZIN-PE1_09, ZIN-PE1_10	a01, a03, c07
02	practical classes	30	course work	ZIN-PE1_01, ZIN-PE1_02, ZIN-PE1_03, ZIN-PE1_04, ZIN-PE1_05, ZIN-PE1_06, ZIN-PE1_07, ZIN-PE1_08, ZIN-PE1_09, ZIN-PE1_10	a03, b08, d03, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Pedagogika 1**
Module code	KN-2025-PE1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Moduł pełni funkcję ogólnego, propedeutycznego fundamentu teoretycznego i ma na celu wprowadzenie słuchaczy w kulturę naukową dyscypliny pedagogiki, wyjaśnienie im źródeł i miejsca pedagogiki w nauce, jej funkcji, znaczenia, przedmiotowego i metodologicznego powiązania z innymi dyscyplinami w obrębie nauk społecznych i humanistycznych. Skupia się na wyposażeniu osób studiujących w wiedzę i umiejętności krytycznej analizy paradygmatów pedagogicznych, procesu wychowania i jego metodycznych aspektów, sytuacji edukacyjnych z jednoczesnym uwzględnieniem organizacji systemu oświaty, pozycji szkoły jako instytucji społecznej i wspierającej rozwój ucznia/wychowanka we współpracy z jego rodziną jako pierwotnym środowiskiem wychowawczym.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PE1_01	student/studentka zna i rozumie system oświaty: organizację i funkcjonowanie systemu oświaty, podstawowe zagadnienia prawa oświatowego, krajowe i międzynarodowe regulacje dotyczące praw człowieka, dziecka, ucznia oraz osób z niepełnosprawnościami, znaczenie pozycji szkoły jako instytucji edukacyjnej, funkcje i cele edukacji szkolnej, modele współczesnej szkoły, pojęcie ukrytego programu szkoły, alternatywne formy edukacji, zagadnienie prawa wewnątrzszkolnego, podstawę programową w kontekście programu nauczania oraz działania wychowawczo-profilaktyczne, tematykę oceny jakości działalności szkoły lub placówki systemu oświaty (B.2.W1.)	KN.2023_W08 KN.2023_W09 KN.2023_W10	3 3 3
PE1_02	student/studentka zna i rozumie wychowanie w kontekście rozwoju: ontologiczne, aksjologiczne i antropologiczne podstawy wychowania; istotę i funkcje wychowania oraz proces wychowania, jego strukturę, właściwości i dynamikę; pomoc psychologiczno-pedagogiczną w szkole – regulacje prawne, formy i zasady udzielania wsparcia w placówkach systemu oświaty, a także znaczenie współpracy rodziny ucznia i szkoły oraz szkoły ze środowiskiem pozaszkolnym (B. 2.W3) oraz zasady dokonywania diagnozy nauczycielskiej i techniki diagnostyczne w pedagogice (B.2.W6)	KN.2023_W01 KN.2023_W02 KN.2023_W04 KN.2023_W07	3 4 4 4
PE1_03	student/studentka zna i rozumie problemy dzieci zaniedbanych i pozbawionych opieki oraz szkolną sytuację dzieci z doświadczeniem migracyjnym; problematykę dziecka w sytuacji kryzysowej lub traumatycznej; zagrożenia dzieci i młodzieży: zjawiska agresji i przemocy, w tym agresji elektronicznej, oraz uzależnień, w tym od środków	KN.2023_W06	3

	psychoaktywnych i komputera, a także zagadnienia związane z grupami nieformalnymi, podkulturami młodzieżowymi i sektami (B.2.W4)		
PE1_04	student/studentka potrafi rozpoznawać sytuację uczniów - aspekty rozwoju poznawczego, sytuację zagrożenia i uzależnień (B.2.U5), określić przybliżony potencjał ucznia (B.2.U7) oraz nawiązywać współpracę z nauczycielami oraz ze środowiskiem pozaszkolnym (B.2.U4)	KN.2023_U01 KN.2023_U03 KN.2023_U18	3 3 3
PE1_05	student/studentka jest gotów/gotowa do okazywania empatii uczniom oraz zapewniania im wsparcia i pomocy (B.2.K1), a także współpracy z nauczycielami i specjalistami w celu doskonalenia swojego warsztatu pracy (B.2.K4) i samodzielnego pogłębiania wiedzy pedagogicznej (B.2.K3)	KN.2023_KS02 KN.2023_KS05 KN.2023_KS06	4 4 3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*

f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	lecture	15	course work	PE1_01, PE1_02, PE1_05	a01, a03, b02, c07, d03, f02
02	practical classes	30	course work	PE1_01, PE1_02, PE1_03, PE1_04, PE1_05	a03, a05, b04, b08, c07, d03, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Pierwsza pomoc przedmedyczna**
Module code	KN-2025-ZDRO-PPP
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem realizacji modułu jest nabycie przez uczestnika podstawowej wiedzy i umiejętności z zakresu udzielania pierwszej pomocy przedmedycznej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ZDROW-PPP_01	Zna i rozumie zasady udzielania pierwszej pomocy przedmedycznej.	KN.2023_W11	5
ZDROW-PPP_02	Potrafi udzielać pierwszej pomocy przedmedycznej	KN.2023_U17	5
ZDROW-PPP_03	Jest gotów do współpracy w w zakresie udzielania pierwszej pomocy przedmedycznej w zespole, wspólnie z innymi nauczycielami, pedagogami, specjalistami, rodzicami lub opiekunami uczniów i innymi członkami społeczności szkolnej i lokalnej.	KN.2023_KS07	4

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right*

		habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	practical classes	15	course work	ZDROW-PPP_01, ZDROW-PPP_02, ZDROW-PPP_03	a03, c06

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Podstawy Dydaktyki**
Module code	KN-2025-PD
Number of the ECTS credits	2
Language of instruction	
Purpose and description of the content of education	Moduł przybliża główne idee w dydaktycznym myśleniu i działaniu, sprowadzające się do odpowiedzialnego przygotowania przyszłych nauczycieli – refleksyjnych, skutecznych, twórczych profesjonalistów – którym umożliwia się zapoznanie się i zrozumienie naukowych podstaw procesu kształcenia (nauczania-uczenia się) i samokształcenia. Treści modułu koncentrują się wokół przebiegu procesu nauczania-uczenia się, jego planowania, organizacji i uwarunkowań. W ramach zajęć omawiane są podstawowe pojęcia z zakresu dydaktyki ogólnej oraz istota procesu nauczania-uczenia się, jego koncepcje i fundamentalne elementy oraz zasady z zgodnie z którymi powinien być realizowany i ewaluowany, w celu zaprojektowania zajęć dydaktycznych dostosowanych do zróżnicowanych potrzeb edukacyjnych uczniów.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PD_01	student/studentka zna i rozumie usytuowanie dydaktyki w zakresie pedagogiki i relację dydaktyki ogólnej do dydaktyk szczegółowych, a także przedmiot i zadania dydaktyki (C.W1) oraz współczesne podejścia i koncepcje do procesu nauczania – uczenia się, zasady organizujące jego przebieg (C.W3); zna i rozumie autonomię dydaktyczną nauczyciela oraz zagadnienie oceny efektywności dydaktycznej nauczyciela i jakości działalności szkoły oraz edukacyjną wartość dodaną (C.W5; C.W6)	KN.2023_W02 KN.2023_W03	4 4
PD_02	student/studentka zna i rozumie zagadnienie klasy szkolnej jako środowiska edukacyjnego: style kierowania klasą, problem ładu i dyscypliny, interakcje, procesy społeczne w klasie, integrację klasy szkolnej, tworzenie środowiska sprzyjającego postępom w nauce oraz sposób nauczania w klasie zróżnicowanej pod względem poznawczym, kulturowym, statusu społecznego lub materialnego (C.W2)	KN.2023_W03 KN.2023_W06 KN.2023_W12	3 3 3
PD_03	student/studentka zna i rozumie organizację procesu kształcenia oraz pracy uczniów: cele kształcenia - źródła, sposoby ich formułowania oraz ich rodzaje; metody nauczania-uczenia się; treści nauczania; środki dydaktyczne (C.W3), a także konieczność projektowania działań edukacyjnych dostosowanych do zróżnicowanych potrzeb i możliwości uczniów, w szczególności możliwości psychofizycznych oraz tempa uczenia się, a także potrzebę i sposoby wyrównywania szans edukacyjnych, znaczenie odkrywania oraz rozwijania predyspozycji i uzdolnień oraz zagadnienia związane z przygotowaniem uczniów do udziału w konkursach i olimpiadach przedmiotowych (C.W5)	KN.2023_W04 KN.2023_W06 KN.2023_W14 KN.2023_W15	3 3 3 3

PD_04	student/studentka zna i rozumie zagadnienie lekcji jako jednostki dydaktycznej oraz jej budowę, modele lekcji i sztukę prowadzenia lekcji, a także style i techniki pracy z uczniami (C.W4) oraz sposoby i znaczenie oceniania osiągnięć szkolnych uczniów: ocenianie kształtujące w kontekście efektywności nauczania, wewnątrzszkolny system oceniania, rodzaje i sposoby przeprowadzania sprawdzianów i egzaminów zewnętrznych (C.W6)	KN.2023_W04	3
PD_05	student/studentka zna i rozumie metody porozumiewania się w celach dydaktycznych – sztukę wykładania i zadawania pytań, sposoby zwiększania aktywności komunikacyjnej uczniów (C.W7)	KN.2023_W12	3
PD_06	student/studentka potrafi zaprojektować strukturę zajęć lekcyjnych, uwzględniając model lekcji (C.U4) oraz działania służące integracji klasy szkolnej (C.U2)	KN.2023_U03 KN.2023_U06	3 3
PD_07	student/studentka potrafi dobrać metody nauczania-uczenia się, uwzględniając inne elementy procesu kształcenia (C.U3) oraz potrafi zorganizować pracę uczniów, dostosowując metody pracy do klasy zróżnicowanej pod względem poznawczym, kulturowym, statusu społecznego lub materialnego (C.U1) i do ucznia zdolnego w celu przygotowania go do udziału w konkursie przedmiotowym lub współzawodnictwie sportowym (C.U5)	KN.2023_U02 KN.2023_U03 KN.2023_U07 KN.2023_U12	3 3 4 3
PD_08	student/studentka potrafi dokonać oceny pracy ucznia i zaprezentować ją w formie oceny kształtującej (C.U6)	KN.2023_U10 KN.2023_U11	3 3
PD_09	student/studentka jest gotów/gotowa do twórczego poszukiwania najlepszych rozwiązań dydaktycznych sprzyjających postępom uczniów (C.K1) oraz do budowania relacji i porozumiewania się z wszystkimi podmiotami procesu dydaktyczno-wychowawczego	KN.2023_KS02 KN.2023_KS03 KN.2023_KS04	3 4 4

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c02	Demonstration methods	Video show

		reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	lecture	15	course work	PD_01, PD_02, PD_03, PD_05, PD_07, PD_09	a01, a03, b02, c02, c07, f02
02	discussion classes	15	course work	PD_03, PD_04, PD_05, PD_06, PD_07, PD_08, PD_09	a03, a05, b08, c02, c07, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No

d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Praktyka zawodowa psychologiczno-pedagogiczna**
Module code	KN-2025-PZPP
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	W ramach modułu realizowane są treści niezbędne do uzyskania ogólnego przygotowania psychologiczno-pedagogicznego (zgodnie z wytycznymi zawartymi w Obwieszczeniu Ministra Edukacji i Nauki z dnia 6 kwietnia 2021 r.). Celem praktyki jest zdobywanie doświadczenia związanego z pracą opiekuńczo-wychowawczą nauczyciela i konfrontowanie nabytej wiedzy teoretycznej z rzeczywistością pedagogiczną. Podczas praktyk studenci/studentki gromadzą doświadczenia dotyczące pracy opiekuńczo-wychowawczej z uczniami, wychowankami, doświadczenia związane z planowaniem, organizacją i przebiegiem zajęć w grupie wychowawczej, ich nadzorem, a także nabywają wiedzę i umiejętności w zakresie poznawania sytuacji społecznej, potrzeb, zainteresowań i zdolności uczniów, wychowanków i organizują, przeprowadzają (pod nadzorem opiekuna praktyk zawodowych) zajęcia wychowawcze (w tym zajęcia integrujące grupę i działania profilaktyczne). Mają możliwość przeanalizowania funkcjonowania rady pedagogicznej i zespołu wychowawców klas, organizacji pracy wychowawców świetlicy, pedagoga szkolnego, psychologa oraz sytuacji pedagogicznych zaobserwowanych i doświadczonych podczas praktyk. Praktyki zawodowe są realizowane w szkołach ogólnokształcących.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PZPP_01	Student/studentka zna i rozumie zadania charakterystyczne dla szkoły lub placówki systemu oświaty oraz środowisko, w jakim one działają; organizację, statut i plan pracy szkoły, program wychowawczo-profilaktyczny oraz program realizacji doradztwa zawodowego; zasady zapewniania bezpieczeństwa uczniom w szkole i poza nią.	KN.2023_W08 KN.2023_W09 KN.2023_W11	4 5 5
PZPP_02	Student/studentka potrafi wyciągać wnioski z obserwacji pracy wychowawcy klasy, jego interakcji z uczniami oraz sposobu, w jaki planuje i przeprowadza zajęcia wychowawcze; wyciągać wnioski z obserwacji sposobu integracji działań opiekuńczo-wychowawczych i dydaktycznych przez nauczycieli przedmiotów; wyciągać wnioski, w miarę możliwości, z bezpośredniej obserwacji pracy rady pedagogicznej i zespołu wychowawców klas; wyciągać wnioski z bezpośredniej obserwacji pozalekcyjnych działań opiekuńczo- -wychowawczych nauczycieli, w tym podczas dyżurów na przerwach międzylekcyjnych i zorganizowanych wyjść grup uczniowskich; zaplanować i przeprowadzić zajęcia wychowawcze pod nadzorem opiekuna praktyk zawodowych; analizować, przy pomocy opiekuna praktyk zawodowych oraz nauczycieli	KN.2023_U01 KN.2023_U05 KN.2023_U06 KN.2023_U18	4 4 4 4

	akademickich prowadzących zajęcia w zakresie przygotowania psychologiczno- -pedagogicznego, sytuacje i zdarzenia pedagogiczne zaobserwowane lub doświadczone w czasie praktyk.		
PZPP_03	Student/studentka jest gotowy/a do skutecznego współdziałania z opiekunem praktyk zawodowych i z nauczycielami w celu poszerzania swojej wiedzy.	KN.2023_KS01 KN.2023_KS02 KN.2023_KS07	5 5 5

9. Methods of conducting classes

Code	Category	Name (description)
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	internship	30	course work	PZPP_01, PZPP_02, PZPP_03	e05, e06, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No

c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Psychologia 1**
Module code	KN-2023-SS-ZIN-PS1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	W ramach modułu realizowane są treści z zakresu psychologii niezbędne do uzyskania ogólnego przygotowania psychologicznego do pracy w zawodzie nauczyciela (zgodnie z wytycznymi zawartymi w Obwieszczeniu Ministra Edukacji i Nauki z dnia 6 kwietnia 2021 r.) Celem merytorycznym zajęć jest wprowadzenie studentów w podstawową problematykę oraz terminologię psychologiczną, zapoznanie z głównymi koncepcjami, dziedzinami i pojęciami psychologii, ukazanie jej znaczenia dla rozumienia funkcjonowania człowieka.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ZIN-PS1_01	Zna i rozumie podstawowe pojęcia psychologii: procesy poznawcze, spostrzeganie, odbiór i przetwarzanie informacji, mowę i język, myślenie i rozumowanie, uczenie się i pamięć, rolę uwagi, emocje i motywacje w procesach regulacji zachowania, zdolności i uzdolnienia, psychologię różnic indywidualnych – różnice w zakresie inteligencji, temperamentu, osobowości i stylu poznawczego.	KN.2023_W01	2
ZIN-PS1_02	Zna i rozumie proces rozwoju ucznia w okresie dzieciństwa: rozwój fizyczny, motoryczny i psychoseksualny, rozwój procesów poznawczych (myślenie, mowa, spostrzeganie, uwaga i pamięć), rozwój społeczno-emocjonalny i moralny, zmiany fizyczne i psychiczne w okresie dojrzewania, rozwój wybranych funkcji psychicznych, normę rozwojową, rozwój i kształtowanie osobowości, rozwój w kontekście wychowania, zaburzenia w rozwoju podstawowych procesów psychicznych, teorie integralnego rozwoju ucznia, dysharmonie i zaburzenia rozwojowe u uczniów, zaburzenia zachowania, zagadnienia: nieśmiałości i nadpobudliwości, szczególnych uzdolnień, zaburzeń funkcjonowania w okresie dorastania, obniżenia nastroju, depresji, krystalizowania się tożsamości, dorosłości, identyfikacji z nowymi rolami społecznymi, a także kształtowania się stylu życia.	KN.2023_W02 KN.2023_W06	4 2
ZIN-PS1_03	Zna i rozumie teorię spostrzegania społecznego i komunikacji: zachowania społeczne i ich uwarunkowania, sytuację interpersonalną, empatię, zachowania asertywne, agresywne i uległe, postawy, stereotypy, uprzedzenia, stres i radzenie sobie z nim, porozumiewanie się ludzi w instytucjach, reguły współdziałania, procesy komunikowania się, bariery w komunikowaniu się, media i ich wpływ wychowawczy, style komunikowania się uczniów i nauczyciela, bariery w komunikowaniu się w klasie, różne formy komunikacji − autoprezentację, aktywne słuchanie, efektywne nadawanie,	KN.2023_W04 KN.2023_W12	2 5

	komunikację niewerbalną, porozumiewanie się emocjonalne w klasie, porozumiewanie się w sytuacjach konfliktowych.		
ZIN-PS1_04	Zna i rozumie proces uczenia się: modele uczenia się, w tym koncepcje klasyczne i współczesne ujęcia w oparciu o wyniki badań neuropsychologicznych, metody i techniki uczenia się z uwzględnieniem rozwijania metapoznania, trudności w uczeniu się, ich przyczyny i strategie ich przezwyciężania, metody i techniki identyfikacji oraz wspomagania rozwoju uzdolnień i zainteresowań, bariery i trudności w procesie komunikowania się, techniki i metody usprawniania komunikacji z uczniem oraz między uczniami.	KN.2023_W02	4
ZIN-PS1_05	Potrafi obserwować procesy rozwojowe uczniów.	KN.2023_U01 KN.2023_U06	2 3
ZIN-PS1_06	Potrafi rozpoznawać bariery i trudności uczniów w procesie uczenia się.	KN.2023_U01 KN.2023_U03 KN.2023_U06 KN.2023_U11	2 3 3 2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	lecture	15	course work	ZIN-PS1_01, ZIN-PS1_02, ZIN-PS1_03, ZIN-PS1_04, ZIN-PS1_05, ZIN-PS1_06	a01, c07
02	practical classes	30	course work	ZIN-PS1_01, ZIN-PS1_02, ZIN-	b08, c07, d02, f02

				PS1_03, ZIN-PS1_04, ZIN-PS1_05, ZIN-PS1_06	

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Psychologia 1**
Module code	KN-2025-PS1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem merytorycznym zajęć jest wprowadzenie studentów w problematykę oraz terminologię psychologiczną, zapoznanie z głównymi koncepcjami, dziedzinami i pojęciami psychologii, ukazanie jej znaczenia dla rozumienia funkcjonowania człowieka. W ramach modułu realizowane są treści z zakresu psychologii niezbędne do uzyskania ogólnego przygotowania psychologicznego do pracy w zawodzie nauczyciela (zgodnie z wytycznymi zawartymi w Obwieszczeniu Ministra Edukacji i Nauki z dnia 6 kwietnia 2021 r.). Zaliczenie modułu pozwala na osiągnięcie części efektów uczenia się z zakresu psychologii wyznaczonych w standardzie kształcenia nauczycieli. Ich kontynuacja realizowana będzie w ramach warsztatu psychologicznego (3. semestr II roku studiów I stopnia) oraz w ramach modułu Psychologia 2. na II stopniu studiów.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PS1_01	zna podstawowe pojęcia psychologiczne z obszaru psychologii poznawczej (spostrzeganie, odbiór i przetwarzanie informacji; uwaga i pamięć, mowa i język, myślenie i rozumowanie), psychologii emocji i motywacji, osobowości oraz różnic indywidualnych (inteligencja, temperament, osobowość i style poznawcze) oraz rozumie ich znaczenie dla praktyki edukacyjnej i wychowawczej (B.1.W1)	KN.2023_W01	2
PS1_02	zna i rozumie prawidłowości rozwoju ucznia (fizycznego, motorycznego, psychoseksualnego, poznawczego, społeczno-emocjonalnego i moralnego), najważniejsze zadania rozwojowe stojące przed uczniem w kolejnych etapach jego życia oraz zna i rozumie pojęcie normy rozwojowej (B.1.W2|)	KN.2023_W02 KN.2023_W06	4 2
PS1_03	zna teorię spostrzegania społecznego i komunikacji; rozumie procesy grupowe, ich uwarunkowania i konsekwencje, rozpoznaje role grupowe (B.1.W3)	KN.2023_W12	5
PS1_04	zna i rozumie klasyczne oraz współczesne teorie i koncepcje psychologiczne dotyczące procesów wychowania, uczenia się i nauczania oraz ich różnorodnych uwarunkowań (B.1.W4)	KN.2023_W02	4
PS1_05	potrafi obserwować procesy rozwojowe uczniów (B.1.U.1)	KN.2023_U01	3
PS1_06	potrafi rozpoznawać potrzeby uczniów w rozwoju uzdolnień i zainteresowań (B.1.U.6)		

		KN.2023_U03	3
PS1_07	potrafi skutecznie i świadomie komunikować się (B.1.U.3)	KN.2023_U10	2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b07	Problem-solving methods	Activating methods: a case study *a comprehensive description of a phenomenon connected with the selected discipline; reflecting the reality, presenting the 'what', 'where' and 'how' of the phenomenon, i.e., all of its key aspects to be discussed in class; used as a reproduction, presentation, discussion or diagnosis of factors that shape the phenomenon or interact with it; an in-depth qualitative analysis and evaluation of a selected phenomenon*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*

f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	lecture	15	course work	PS1_01, PS1_02, PS1_04	a01
02	practical classes	30	course work	PS1_03, PS1_05, PS1_06, PS1_07	b04, b07, b08, b09, c02, c07, d02, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic*	Yes

		teacher, their verification or correction resulting in completing the task with at least the minimum passing grade	

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Warsztaty pedagogiczne 1**
Module code	KN-2025-WPE1
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Moduł skoncentrowany wokół nauczycielskiego oddziaływania pedagogicznego (wychowawczo-opiekuńczego) w klasie szkolnej jako zróżnicowanej grupie społecznej oraz wokół interakcji i uczniowskich kontaktów społecznych oraz rozwoju młodych ludzi w środowisku szkolnym (umiejętności nawiązywania kontaktów społecznych, współżycia i współdziałania z innymi, zaspokajania potrzeby uznania, akceptacji, kontaktu emocjonalnego).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WPE1_01	student/studentka zna i rozumie zasady pracy opiekuńczo-wychowawczej nauczyciela: obowiązki nauczyciela jako wychowawcy klasy, metodykę pracy wychowawczej, program pracy wychowawczej, style kierowania klasą, ład i dyscyplinę, poszanowanie godności dziecka, ucznia lub wychowanka, różnicowanie, indywidualizację i personalizację pracy z uczniami, funkcjonowanie klasy szkolnej jako grupy społecznej, procesy społeczne w klasie, rozwiązywanie konfliktów w klasie lub grupie wychowawczej, animowanie życia społeczno-kulturalnego klasy, wspieranie samorządności i autonomii uczniów, rozwijanie u dzieci, uczniów lub wychowanków kompetencji komunikacyjnych i umiejętności społecznych niezbędnych do nawiązywania poprawnych relacji; pojęcia integracji i inkluzji (B.2.W4)	KN.2023_W02 KN.2023_W03 KN.2023_W04 KN.2023_W05 KN.2023_W12	3 3 4 3 3
WPE1_02	student/studentka potrafi rozpoznawać sytuację społeczną uczniów w zespole klasowym, zdiagnozować ich potrzeby edukacyjne i zaprojektować dla niego odpowiednie wsparcie (B.2.U6)	KN.2023_U01 KN.2023_U02 KN.2023_U03 KN.2023_U06 KN.2023_U09	3 3 3 3 3
WPE1_03	student/studentka jest gotów/gotowa do profesjonalnego rozwiązywania konfliktów w klasie szkolnej lub grupie wychowawczej (B.2.K2), a także samodzielnego pogłębiania wiedzy pedagogicznej (B.2.K3)	KN.2023_KS02 KN.2023_KS03 KN.2023_KS04	4 4 3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b07	Problem-solving methods	Activating methods: a case study *a comprehensive description of a phenomenon connected with the selected discipline; reflecting the reality, presenting the 'what', 'where' and 'how' of the phenomenon, i.e., all of its key aspects to be discussed in class; used as a reproduction, presentation, discussion or diagnosis of factors that shape the phenomenon or interact with it; an in-depth qualitative analysis and evaluation of a selected phenomenon*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b10	Problem-solving methods	SWOT analysis *a method of analyzing a phenomenon/action/work of an institution, employed to organize information and solve problems; applied in strategic planning, project implementation or solving a business or organizational problem; a universal tool to be used in the initial stage of a strategic analysis which involves sorting information about a problem into four categories: strengths and weaknesses, opportunities and threats; SWOT analysis makes it possible to determine the factors in favour of a project and its chances for success, as well as eliminating or reducing negative factors and threats to the project at the stage of early diagnosis*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	workshop	15	course work	WPE1_01, WPE1_02, WPE1_03	a05, b04, b07, b08, b10, c07, f02, f03

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Kształcenie Nauczycielskie: Warsztaty psychologiczne 1**
Module code	KN-2025-WPS1
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Warsztaty psychologiczne stanowią kontynuację zajęć z zakresu psychologii przygotowujących studentów zamierzających uzyskać kwalifikacje nauczycielskie. Ich celem jest wyposażenie w umiejętności przydatne w efektywnej pracy edukacyjnej i wychowawczej. Program zajęć opracowano zgodnie z wytycznymi zawartymi w Obwieszczeniu Ministra Edukacji i Nauki z dnia 6 kwietnia 2021 r. Zaliczenie modułu pozwala na osiągnięcie części efektów uczenia się z zakresu psychologii wyznaczonych w standardzie kształcenia nauczycieli. Ich kontynuacja realizowana będzie w ramach w ramach modułu Psychologia 2. na II stopniu studiów.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WPS1_01	zna i rozumie mechanizmy powstawania konfliktów, stereotypów i uprzedzeń, a także rolę nauczyciela w modelowaniu postaw i zachowań uczniów (B.1.W3)	KN.2023_W12	5
WPS1_02	potrafi obserwować zachowania społeczne i ich uwarunkowania (B.1.U2)	KN.2023_U11	3
WPS1_03	posiada umiejętności dialogowego rozwiązywania konfliktów, usuwania barier komunikacyjnych i budowania relacji opartych na zaufaniu (B.1.U.4)	KN.2023_U05	3
WPS1_04	potrafi identyfikować potrzeby uczniów i tworzyć sytuacje motywujące uczniów do pracy nad sobą w celu uzyskania pożądanych efektów edukacyjnych i wychowawczych (B.1.U.6)	KN.2023_U06	3
WPS1_05	jest gotowy do wykorzystania zdobytej wiedzy psychologicznej do analizy zdarzeń pedagogicznych, a także budowania relacji opartej na wzajemnym zaufaniu między wszystkimi podmiotami procesu wychowania i kształcenia (B.1.K.2)	KN.2023_KS01	2

9. Methods of conducting classes

Code	Category	Name (description)
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and*

		turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem
b07	Problem-solving methods	Activating methods: a case study *a comprehensive description of a phenomenon connected with the selected discipline; reflecting the reality, presenting the 'what', 'where' and 'how' of the phenomenon, i.e., all of its key aspects to be discussed in class; used as a reproduction, presentation, discussion or diagnosis of factors that shape the phenomenon or interact with it; an in-depth qualitative analysis and evaluation of a selected phenomenon*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	workshop	15	course work	WPS1_01, WPS1_02, WPS1_03, WPS1_04, WPS1_05	b04, b07, c07, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes	Yes

		devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.	
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Language Culture**
Module code	W4-MT-S1-24-KJez
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	W ramach modułu Kultura języka omawiane są podstawowe pojęcia z zakresu kultury języka (norma wzorcowa i norma potoczna, uzus, błąd językowy, innowacja językowa). Poprzez praktyczne ćwiczenia student/studentka przyswaja sobie najważniejsze zalecenia poprawnościowe m.in. w zakresie: wymowy, pisowni, nietypowej odmiany słów, ich tworzenia, modyfikowania i łączenia się w bardziej złożone formy, stosowania zapożyczeń, ale też budowania zdań i tekstów w różnych stylach polszczyzny, a także logicznego i uporządkowanego wysławiania się. Celem przedmiotu jest opanowanie przez studentów wiedzy o najważniejszych zjawiskach współczesnej polszczyzny i zdobycie umiejętności rozumienia zmian zachodzących w obrębie normy i zwyczaju językowego. Efektem prowadzonych zajęć powinno być ugruntowanie przekonania o konieczności poprawnego stosowania języka polskiego jako narzędzia komunikacji, znajomość zasad poprawnej i skutecznej rozmowy, znajomość różnych form podawczych, umiejętność stosowania języka w różnych sytuacjach komunikacyjnych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KJez_01	jest przygotowany do aktywnego i świadomego uczestnictwa w sferze dyskursu publicznego w zakresie językowym	KN.2023_U15 KN.2023_W05 KN.2023_W12 KN.2023_W13	3 3 3 3
KJez_02	zna podstawową terminologię z zakresu kultury języka (m.in. system-norma-uzus; błąd językowy, innowacja językowa) oraz potrafi rozstrzygać konkretne fakty językowe	KN.2023_U15 KN.2023_W12	3 3
KJez_03	potrafi analizować tekst pod względem poprawnościowym i stylistycznym; potrafi także przygotować tekst własny poprawny pod względem poprawnościowym i stylistycznym	KN.2023_U15 KN.2023_W12	3 3
KJez_04	rozumie zróżnicowanie współczesnej polszczyzny, dostrzega różnicę między językiem mówionym a pisanym, zna podstawowe odmiany stylowe, rozpoznaje symptomy języka przemocy, realizuje cele komunikacyjne wykorzystując język inkluzywny	KN.2023_U15 KN.2023_W05	3 3

		KN.2023_W12 KN.2023_W13	3 3
KJez_05	ma potrzebę doskonalenia własnych kompetencji językowych, rozwijania własnej świadomości językowej	KN.2023_KS03 KN.2023_U15	3 3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
KJez_fs_01	practical classes	30	course work	KJez_01, KJez_02, KJez_03, KJez_04, KJez_05	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Linear Algebra**
Module code	W4-MT-S1-25-ALin
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu „Algebra liniowa” jest zaznajomienie słuchaczy z głównymi narzędziami algebry liniowej nad ciałami, a także przygotowanie bazy pojęciowej dla przedmiotów „Algebra” oraz „Geometria szkolna”. W ramach kursu przewiduje się realizację następujących treści programowych: 1. Przestrzeń i podprzestrzeń liniowa; ich przykłady i konstrukcje. 2. Liniowa niezależność układu wektorów, baza i wymiar przestrzeni liniowej. 3. Struktura zbioru rozwiązań układu równań liniowych. 4. Przekształcenia liniowe i ich macierze, klasyczne przekształcenia geometryczne. 5. Podprzestrzenie niezmiennicze endomorfizmów, wartości i wektory własne. 6. Elementy algebry dwuliniowej, przestrzeń ortogonalna i izometrie przestrzeni ortogonalnych. 7. Afiniczne euklidesowe przestrzenie współrzędnych, metryka euklidesowa, układ współrzędnych. 8. Krzywe i powierzchnie stopnia 2. 9. Elementy numerycznej algebry liniowej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ALin_1	zna główne pojęcia z algebry liniowej; zna i rozumie ich interpretację w klasycznej geometrii analitycznej	K_W04	4
ALin_2	potrafi posługiwać się pojęciami z algebry liniowej oraz dowodzić głównych własności przestrzeni i odwzorowań liniowych	K_U01 K_U04	3 4
ALin_3	zna schematy dowodów kluczowych twierdzeń z algebry liniowej poznanych na wykładzie	K_W02 K_W03	3 3
ALin_4	potrafi konstruować przestrzenie i podprzestrzenie liniowe, przestrzenie ilorazowe, produkty kartezjańskie przestrzeni liniowych oraz ich homomorfizmy	K_U01 K_U04	4 4

ALin_5	zna pojęcie wyznacznika i jego interpretację	K_W04	3
ALin_6	potrafi rozwiązywać układy równań liniowych i interpretować rozwiązania w języku algebry liniowej	K_U04	4
ALin_7	potrafi weryfikować własności przestrzeni liniowych i ich homomorfizmów w konkretnych sytuacjach	K_U04	4
ALin_8	zna i rozumie pojęcie oraz interpretację wektorów i własności własnych	K_W04	3
ALin_9	potrafi zastosować poznane narzędzia algebry liniowej w sytuacjach problemowych	K_U01 K_U04	2 3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
ALin_fs_1	lecture	30	exam	ALin_1, ALin_2, ALin_3, ALin_4, ALin_5, ALin_6, ALin_7, ALin_8, ALin_9	a01
ALin_fs_2	discussion classes	30	course work	ALin_1, ALin_2, ALin_3, ALin_4, ALin_5, ALin_6, ALin_7, ALin_8, ALin_9	e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization	Verification / adjustment / discussion of syllabus provisions	Yes

	of classes	*consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Linear Algebra A**
Module code	W4-MT-S1-25-ALinA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu Algebra liniowa A jest wykształcenie u słuchaczy umiejętności swobodnego posługiwania się klasycznymi pojęciami i narzędziami algebry liniowej nad ciałami oraz przygotowanie bazy pojęciowej dla przedmiotu Geometria A. Przewiduje się realizację następujących treści programowych: 1.Przestrzenie liniowe 2.Baza i wymiar przestrzeni liniowej 3.Struktura zbioru rozwiązań układu równań liniowych 4.Przekształcenia liniowe 5.Wektory i wartości własne 6.Formy dwuliniowe
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ALinA_01	zna w stopniu zaawansowanym pojęcia i fakty z algebry liniowej, potrafi posługiwać się nimi w mowie i piśmie	K_U01 K_U04 K_W04	4 4 4
ALinA_2	potrafi wykonywać działania na wektorach w dowolnej przestrzeni liniowej, badać liniową niezależność wektorów, wyznaczać bazy podprzestrzeni i obliczać ich wymiary	K_U04	5
ALinA_3	potrafi rozwiązywać układy równań liniowych i interpretować ich rozwiązania w języku algebry liniowej	K_U04	5
ALinA_4	potrafi posługiwać się pojęciem przekształcenia liniowego i jego macierzy	K_U04	5
ALinA_5	zna pojęcie i zastosowanie wektorów i wartości własnych	K_W04	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
ALinA_fs_1	lecture	30	exam	ALinA_01, ALinA_2, ALinA_3, ALinA_4, ALinA_5	a01
ALinA_fs_2	discussion classes	30	course work	ALinA_01, ALinA_2, ALinA_3, ALinA_4, ALinA_5	e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

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1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Mathematical Analysis I**
Module code	W4-MT-S1-25-AMa1
Number of the ECTS credits	10
Language of instruction	Polish
Purpose and description of the content of education	Moduł Analiza matematyczna I ma na celu nauczenie studentów posługiwania się metodami rachunku różniczkowego i rachunku całkowego funkcji jednej i wielu zmiennych, a także metodami szeregów funkcyjnych. Przewiduje się realizację następujących treści programowych: 1. Funkcja pierwotna i całka nieoznaczona. 2. Całka Riemanna. Funkcje całkowalne w sensie Riemanna. Własności całki Riemanna. Podstawowe twierdzenie rachunku całkowego – wzór Newtona-Leibniza. Całkowanie przez części i przez podstawienie. Twierdzenia o wartości średniej. Całki niewłaściwe. Całkowe kryterium zbieżności szeregów. Zastosowania całki Riemanna. 3. Punktowa i jednostajna zbieżność ciągów funkcyjnych. Jednostajna zbieżność a ciągłość, różniczkowalność, całkowalność. Szeregi funkcyjne. 4. Szeregi potęgowe. Promień zbieżności i twierdzenie Cauchy'ego-Hadamarda. Rozwijanie funkcji w szereg potęgowy. Różniczkowanie i całkowanie szeregów potęgowych. Funkcje analityczne (w dziedzinie rzeczywistej). Analityczne definicje podstawowych funkcji elementarnych i ich własności. 5. Przestrzenie unormowane i odwzorowania liniowe. 6. Teoria różniczkowania (zasadniczo) w przestrzeniach skończenie wymiarowych. Pochodne kierunkowe, cząstkowe i pochodna funkcji. Reguły różniczkowania. Pochodne wyższych rzędów. Wzór Taylora. Ekstrema lokalne. Lokalna odwracalność odwzorowań. Funkcje uwikłane. Dyfeomorfizmy. Ekstrema warunkowe.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
AMa1_1	zna istotne pojęcia i twierdzenia z teorii całki Riemanna	K_W04 K_W05	4 3
AMa1_2	potrafi badać punktową i jednostajną zbieżność ciągów funkcyjnych	K_U01 K_U03	2 1
AMa1_3	potrafi rozwijać funkcje w szeregi potęgowe	K_U01	1

AMa1_4	widzi potrzebę wprowadzania działań nieskończonych	K_W01	1
AMa1_5	zna główne pojęcia i fakty z zakresu rachunku różniczkowego funkcji wielu zmiennych	K_W04 K_W05	3 2
AMa1_6	potrafi stosować metody rachunku różniczkowego i całkowego do obliczania niektórych wielkości matematycznych i fizycznych	K_U01 K_U03 K_U14	3 3 2
AMa1_7	rozwiązuje zadania typu optymalizacyjnego	K_U01 K_U03 K_U14	3 3 1

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
AMa1_fs_1	lecture	60	exam	AMa1_1, AMa1_2, AMa1_3, AMa1_4, AMa1_5, AMa1_6, AMa1_7	a01
AMa1_fs_2	discussion classes	60	course work	AMa1_1, AMa1_2, AMa1_3, AMa1_4, AMa1_5, AMa1_6, AMa1_7	b08, d02, d04, e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Mathematical Analysis I A**
Module code	W4-MT-S1-25-AMa1A
Number of the ECTS credits	11
Language of instruction	Polish
Purpose and description of the content of education	Moduł Analiza matematyczna I A ma na celu nauczenie studentów posługiwania się metodami rachunku różniczkowego i rachunku całkowego funkcji jednej i wielu zmiennych, a także metodami szeregów potęgowych i szeregów Fouriera. Przewiduje się realizację następujących treści programowych: 1. Całka Riemanna w przestrzeni : Pojęcie funkcji pierwotnej, całkowanie przez części i przez podstawienie. Twierdzenie Newtona-Leibniza. Zastosowania. 2. Ciągi i szeregi funkcyjne: Zbieżność punktowa i jednostajna. Konsekwencje zbieżności jednostajnej (ciągłość, różniczkowalność, całkowalność). Kryteria Weierstrassa i Dirichleta. 3. Szeregi potęgowe: Promień zbieżności i twierdzenie Cauchy'ego-Hadamarda. Rozwijanie w szereg potęgowy. Różniczkowanie i całkowanie szeregów potęgowych. Funkcje analityczne a funkcje klasy C^∞ (w dziedzinie rzeczywistej). Funkcje e^z, sin z, cos z, ln (1+z) w dziedzinie zespolonej i ich własności. 4. Wprowadzenie do klasycznej teorii szeregów Fouriera. 5. Teoria różniczkowania (zasadniczo) funkcji typu ^n w ^m: Informacja o pochodnej Frécheta w przestrzeni unormowanej. Pochodne kierunkowe i cząstkowe. Jakobian odwzorowania. Pochodne cząstkowe wyższych rzędów. Twierdzenie Taylora. Ekstrema lokalne. Lokalna odwracalność odwzorowań. Funkcje uwikłane. Dyfeomorfizmy. Ekstrema warunkowe.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
AMa1A_1	zna istotne pojęcia i twierdzenia z zakresu całki Riemanna	K_W04 K_W05	4 4
AMa1A_2	zna zasadnicze twierdzenia rachunku różniczkowego funkcji wielu zmiennych	K_W04 K_W05	5 5
AMa1A_3	potrafi stosować metody rachunku różniczkowego i całkowego do obliczania niektórych wielkości matematycznych i fizycznych	K_U01	3

		K_U03 K_U14	3 3
AMa1A_4	rozwiązuje zadania typu optymalizacyjnego	K_U01 K_U03 K_U14	3 3 3
AMa1A_5	widzi potrzebę wprowadzania działań nieskończonych	K_W01	1
AMa1A_6	potrafi rozwijać funkcje w szeregi potęgowe i szeregi Fouriera	K_U01 K_U03	4 4
AMa1A_7	zna kluczowe własności przestrzeni L(X,Y) i L^n(X,Y)	K_W04	2
AMa1A_8	rozumie pojęcia różniczki pierwszego i wyższych rzędów	K_W04	3
AMa1A_9	zna i potrafi zastosować twierdzenia teorii różniczkowania do badania ekstremów lokalnych i związanych	K_U03 K_U14 K_W04	3 2 3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
AMa1A_fs_1	lecture	60	exam	AMa1A_1, AMa1A_2, AMa1A_3, AMa1A_4, AMa1A_5, AMa1A_6, AMa1A_7, AMa1A_8, AMa1A_9	a01
AMa1A_fs_2	discussion classes	60	course work	AMa1A_1, AMa1A_2, AMa1A_3, AMa1A_4, AMa1A_6, AMa1A_8, AMa1A_9	b08, d02, d04, e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Mathematical Analysis II**
Module code	W4-MT-S1-25-AMa2
Number of the ECTS credits	10
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu Analiza matematyczna II jest zapoznanie studentów z elementami teorii miary, teorią całki Lebesgue'a oraz klasycznym wprowadzeniem do form różniczkowych. Przewiduje się realizację następujących treści programowych: 1. Wprowadzenie do teorii miary: Pojęcie przeliczalnie addytywnego ciała zbiorów. Definicja miary i jej podstawowe własności. Twierdzenia o mierze sumy wstępującego i iloczynie zstępującego ciągu zbiorów mierzalnych. Pojęcie miary zewnętrznej. Twierdzenie Carathéodory'ego. 2. Miara Lebesgue'a: Miara zewnętrzna Lebesgue'a. Mierzalność zbiorów borelowskich. Twierdzenie o charakteryzacji zbiorów mierzalnych w sensie Lebesgue'a. Przykład Vitaliego. 3. Teoria całki Lebesgue'a: Funkcje mierzalne. Funkcje proste. Trzy etapy definicji całki. Całka Lebesgue'a. Twierdzenia o przechodzeniu do granicy pod znakiem całki. Twierdzenia Tonellego i Fubiniego. Twierdzenie o zmianie zmiennych. 4. Klasyczne wprowadzenie do form różniczkowych: Krzywe regularne w przestrzeni ^3 i ich parametryzacje. Orientacja krzywej, wektor styczny do krzywej. Pojęcia całek krzywoliniowych nieskierowanych, skierowanych i związki między nimi. Niezależność całki krzywoliniowej skierowanej od drogi całkowania. Twierdzenie Greena i wzory Greena. Powierzchnie regularne i ich parametryzacje. Wektor normalny do powierzchni, orientacja powierzchni. Całki powierzchniowe niezorientowane, zorientowane i związki między nimi. Twierdzenie Gaussa-Ostrogradskiego. Twierdzenie Stokesa.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
AMa2_1	zna fundamentalne pojęcia ogólnej teorii miary	K_W02 K_W04	2 2
AMa2_2	zna idee konstruowania miary Lebesgue'a	K_W02 K_W04	2 2
AMa2_3	potrafi stosować twierdzenia Tonellego i Fubiniego oraz twierdzenie o zmianie zmiennych	K_U01 K_U03	2 2

		K_U14	2
AMa2_4	rozumie potrzebę stosowania całek krzywoliniowych i powierzchniowych i zna związki między nimi	K_W01 K_W04	1 1
AMa2_5	potrafi obliczać całki krzywoliniowe i powierzchniowe	K_U01 K_U03 K_U14	1 1 1
AMat2_6	potrafi obliczać miarę Lebesgue'a nieskomplikowanych zbiorów, a także badać mierzalność i obliczać całki Lebesgue'a niezłożonych funkcji	K_U01 K_U03	3 2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
AMa2_fs_1	lecture	60	exam	AMa2_1, AMa2_2, AMa2_3, AMa2_4, AMa2_5, AMat2_6	a01
AMa2_fs_2	discussion classes	60	course work	AMa2_1, AMa2_2, AMa2_3, AMa2_4, AMa2_5, AMat2_6	b08, d02, d04, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills	No

		activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)	
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Mathematical Analysis II A**
Module code	W4-MT-S1-25-AMa2A
Number of the ECTS credits	12
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu Analiza matematyczna II A jest zapoznanie studentów z klasyczną teorią miary, teorią całek krzywoliniowych i powierzchniowych. Przewiduje się realizację następujących treści programowych: 1. Ogólna teoria miary: Pojęcie przeliczalnie addytywnego ciała zbiorów. Definicja miary i jej najważniejsze własności. Twierdzenia o mierze sumy wstępującego i iloczynie zstępującego ciągu zbiorów mierzalnych. Pojęcie miary zewnętrznej. Twierdzenie Carathéodory'ego. 2. Miara Lebesgue'a: Miara zewnętrzna Lebesgue'a. Mierzalność zbiorów borelowskich. Twierdzenie o charakteryzacji zbiorów mierzalnych w sensie Lebesgue'a. Przykład Vitaliego. 3. Funkcje mierzalne: Zasadnicze własności funkcji mierzalnych. Funkcje proste. 4. Ogólna teoria całki i całka Lebesgue'a: Całka Lebesgue'a. Twierdzenia o przechodzeniu do granicy pod znakiem całki. Twierdzenia Tonellego i Fubiniego. Twierdzenie o zmianie zmiennych. 5. Całki krzywoliniowe i powierzchniowe w ^3 : Krzywe regularne w ^3 i ich parametryzacje. Orientacja krzywej, wektor styczny do krzywej. Pojęcia całek krzywoliniowych nieskierowanych, skierowanych i związki między nimi. Twierdzenie Greena. Niezależność całki krzywoliniowej skierowanej od drogi całkowania. Powierzchnie regularne i ich parametryzacje. Wektor normalny do powierzchni, orientacja powierzchni. Całki powierzchniowe niezorientowane, zorientowane i związki między nimi. Twierdzenie Gaussa-Ostrogradskiego. Klasyczne twierdzenie Stokesa.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
AMa2A_1	zna definicje ciała i σ-ciała, potrafi podać przykłady takich struktur i sprawdzić czy dana rodzina zbiorów jest ciałem (σ-ciałem)	K_U01 K_W02 K_W04 K_W05	2 3 3 3
AMa2A_2	zna idee konstruowania miar, w szczególności miary Lebesgue'a	K_W02 K_W04	2 2

		K_W05	3
AMa2A_3	potrafi obliczyć miarę Lebesgue’a wybranych zbiorów	K_U01	3
AMa2A_4	potrafi sprawdzić mierzalność nieskomplikowanych funkcji	K_U01 K_U03	3 2
AMa2A_5	zna i umie obliczać całki Lebesgue’a niezłożonych funkcji	K_U01 K_U03 K_W04	3 3 3
AMa2A_6	rozumie potrzebę stosowania całek krzywoliniowych i powierzchniowych i zna związki między nimi	K_W01 K_W04	1 2
AMa2A_7	zna i potrafi zastosować standardowe metody obliczania całek podwójnych i potrójnych	K_U01 K_U03 K_U14 K_W02	3 3 3 2
AMa2A_8	potrafi zastosować nabytą wiedzę z analizy matematycznej w praktyce	K_U01 K_U03 K_U07 K_U14	3 3 3 4

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students’ work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*
e01	Practical methods	Laboratory exercise / experiment

		[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
AMa2A_fs_1	lecture	60	exam	AMa2A_1, AMa2A_2, AMa2A_3, AMa2A_4, AMa2A_5, AMa2A_6, AMa2A_7	a01
AMa2A_fs_2	discussion classes	60	course work	AMa2A_1, AMa2A_3, AMa2A_4, AMa2A_5, AMa2A_6, AMa2A_7, AMa2A_8	b08, d02, d04, e01
AMa2A_fs_3	laboratory classes	15	course work	AMa2A_7, AMa2A_8	d01, d04, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Module in the "Civil Society and Entrepreneurship" area**
Module code	MO-2023-SS-SOP
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	“Civil society and entrepreneurship” is the area which like no other contributed to opening university education "to the world", the area which directly connects science and knowledge acquisition to social use (the system of institutions, laws, customs, social norms). Underlying the area are the conviction that education within each academic discipline should be correlated with the awareness of the changing relation between a person and a citizen, between private and collective life, between a political and a non-political subject, etc. The area of “Civil Society and Entrepreneurship” can be pursued by a student within modules dominated by an academic teacher as well as those where the responsibility for achieving the learning outcomes lies mainly with the student, e.g. civil society in action (projects combining social and natural sciences, combining social sciences and humanities, or combining social sciences, mathematics, physics and chemistry) or social participation in practice. The choice from the range of the above-mentioned modules allows for a high individualization of the education process.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Is ready to meet social obligations, co-organize activities for the benefit of the community and is open to scientific solutions to cognitive and practical problems.	MOB.2023_K01	3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience pertaining to civil society and entrepreneurship, in conjunction with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work on civil society and entrepreneurship in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
W_01	Has advanced knowledge of selected scientific theories and methods, and is familiar with issues connected with civil society and entrepreneurship.	MOB.2023_W01	3
W_02	Understands the connection between the issues pertaining to civil society and entrepreneurship, and the leading discipline of the degree programme.	MOB.2023_W01	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, U_01, U_02, W_01, W_02	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No

a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Module in the "Creative Expression and Critical Thinking" area**
Module code	MO-2023-SS-ETKM
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	Underlying the area of “Critical Thinking and Creative Expression” is the conviction that it is necessary to interest students in various intellectual traditions and forms of creative practice making it possible to approach a given problem from many perspectives. It is crucial to develop critical thinking skills, in particular with regard to information present in various forms of communication (popular, popular science, specialist publications, traditional and so-called new media, or artistic activities based on scientific research). Equally important is work in the area of cultural awareness and expression aimed at creative expression of ideas, experiences and emotions through various means of expression: music, theater, literature and visual arts. Driving the process of self-creation is the need to be creative and the need for creative expression, stemming from a deeply rooted human tendency to be inventive while drawing from the values found in art, literature, music, fine arts, values defining the culture of the nation, existing in national traditions, in historical memory and in folk culture.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Is ready to meet social obligations, co-organize activities for the benefit of the community and is open to scientific solutions to cognitive and practical problems.	MOB.2023_K01	3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience pertaining to critical thinking and creative expression in connection with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work in the field of critical thinking and creative expression in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
W_01	Has advanced knowledge of selected scientific theories and methods, and is familiar with issues pertaining to critical thinking and creative expression.	MOB.2023_W01	3
W_02	Understands the connection between issues related to critical thinking and creative expression and the leading discipline of the degree programme.	MOB.2023_W01	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, U_01, U_02, W_01, W_02	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No

a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Module in the "Digital World" area**
Module code	MO-2023-SS-CS
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	Apart from the real world, the digital world is of course another area constantly present in modern people’s lives. The two human environments – the natural and the cultural one – have been joined by a third one, i.e. the digital environment. Modern digital technologies create new opportunities, but their constant development may, in addition to new opportunities, also create new threats. The modules proposed within the “Digital World” area provide an opportunity to learn about the crucial, current technological and social aspects of the digital world and to build competences for conscious, creative and safe functioning in this/her world. The modules of the Digital World area are divided into two sub-areas. Crucial for the first one, dubbed “Digital technologies”, are the issues pertaining to technologies; this/her sub-area will allow students to expand their digital competences in the field of programming as well as data processing and analysis. Essential for the second sub-area, dubbed “Digital society”, is a reflection on the impact of the development of digital technologies, including artificial intelligence, on the way we function as individuals and as entire societies. The purpose of the module content in this/her sub-area is to develop students' skills of navigating the digital world in creatively and safely, while maintaining personal autonomy and self-awareness.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Shows openness to science-based solutions to cognitive and practical problems and is ready to fulfill social obligations.	MOB.2023_K01	3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience gained in the field of digital technologies and issues pertaining to the digital society in conjunction with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work pertaining to the key technological and social aspects of the digital world in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
W_01	Has advanced knowledge of selected scientific theories and methods and is familiar with issues pertaining to key technological and social aspects of the digital world.	MOB.2023_W01	3
W_02	Understands the connection between key technological and social aspects of the digital world and the leading discipline	MOB.2023_W01	3

	of the degree programme.		

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, U_01, U_02, W_01, W_02	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation	No

		reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes	
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Module in the "Health and Personal Development" area**
Module code	MO-2023-SS-ZRO
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	The area of “Health and Personal Development” opens university education to the perspective of the well-being of an individual (i.e., a student, who is a person entering adulthood). The area focuses on such categories as maintaining physical, mental and social health, the level of satisfaction with various spheres of one’s life and the development of "soft" skills (dealing with stress, communicating with others or the conscious shaping and managing one’s life). The modules offered within the “Health” sub-area are meant to equip students with the ability to recognize and assess their own health (including their mental health) and to find appropriate means of promoting it. The point of departure of the module is the presentation of modern knowledge that distinguishes evidence-based medicine from common beliefs. The modules in the “Personal Development” sub-area direct students towards methods of the practical maintenance of one’s well-being (including mental well-being). They supply competences for building one’s personal potential in the modern world in a way which is active and effective as well as conscious and prudent. The main concern is realizing and recognizing one's own preferences, possibilities and limits, as well as the awareness of agency and responsibility for the balance between health, happiness and development. Having attended the module, the individual will be in a position to combine his/her own development with taking care of his/her mental and physical condition and general well-being in a balanced way.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Is ready to meet social obligations, co-organize activities for the benefit of the community and is open to scientific solutions to cognitive and practical problems.	MOB.2023_K01	3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience pertaining to the concept of an individual’s well-being, including their health and personal development, in conjunction with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work regarding the concept of an individual’s well-being, including their health and personal development, in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
W_01	Has advanced knowledge of selected scientific theories and methods, and is familiar with issues connected with the concept of an individual’s well-being, including their health and personal development.	MOB.2023_W01	3

W_02	Understands the connection between the issues pertaining to the concept of an individual’s well-being, including their health and personal development, and the leading discipline of the degree programme.	MOB.2023_W01	3

9.	**Methods of conducting classes**	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one’s own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, U_01, U_02, W_01, W_02	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Module in the "Natural Environment and Technologies" area**
Module code	MO-2023-SS-SNT
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	The “Natural Environment and Technologies” area pertains to human interaction with the material environment, both the natural one and the one heavily modified by technology. This is the environment where people live, which they are subject to, and which they change in many ways. Understanding the Anthropocene requires an understanding of how biological systems function (from cells to ecosystems, to modern environmental threats, climate issues, natural resources, and many other natural issues) as well as an understanding of the rudiments of technical and technological knowledge. It is crucial to know and understand how technological development, especially in the areas of energy, green technologies, modern materials or everyday life (e.g. food production) can change the nature of human impact and support the way we care for the environment. The ways in which the human impact on the environment is regulated include using legal tools, such as nature protection law or energy law, as well as EU regulations, Sustainable Development Goals or the European Green Deal.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Shows openness to science-based solutions to cognitive and practical problems and is ready to meet social obligations.	MOB.2023_K01	3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience pertaining to the human interaction with the material environment – both natural and technologically modified, in conjunction with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work pertaining to the human interaction with the material environment – both natural and technologically modified, in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
W_01	Has advanced knowledge of selected scientific theories and methods, and is familiar with issues connected with human interaction with the material environment – both natural and technologically modified.	MOB.2023_W01	3
W_02	Understands the connection between issues pertaining to human interaction with the material environment – both natural and technologically modified, and the leading discipline of the degree programme.	MOB.2023_W01	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, U_01, U_02, W_01, W_02	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No

a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Module in the "The Limits of Science" area**
Module code	MO-2023-SS-GN
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	Scientific pursuits and the ways people function in the world are geared towards getting to know the reality and acquiring knowledge. All of this/her is within the purview of the “Limits of Science” area. It endeavours to indicate the difference between science and pseudoscience, the pitfalls and benefits of popularizing knowledge, to address the issue of how knowledge is obtained in various research communities. What is the difference between the natural sciences and humanities? What happens on the way from a hypothesis to testing a theory? What methods do the different sciences have at their disposal? Can humanities be scientific and how much literature is there in physics? The “Limits of Science” area strives to indicate practical ways of navigating the world of science. It strives to describe how to distinguish valuable knowledge from information noise, to introduce students to the arcana of recognizing and applying research methods and to develop the panorama of concepts related to the classification of knowledge and cognition, to present the history and the directions of human inquiry. An important role of the area is to indicate the methods of interpreting scientific texts and the research results contained within them, and to develop the ability to present scientific content in an effective and accessible way.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Is ready to meet social obligations, co-organize activities for the benefit of the community and is open to scientific solutions to cognitive and practical problems.	MOB.2023_K01	3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience pertaining to the issues falling under the scope of limits of science , in conjunction with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work on the issues falling under the scope of limits of science in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
W_01	Has advanced knowledge of selected scientific theories and methods, and is familiar with issues typical to scientific enquiry and practicing science.	MOB.2023_W01	3
W_02	Understands the connection between the issues falling under the scope of limits of science and the leading discipline of	MOB.2023_W01	3

	the degree programme.		

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, U_01, U_02, W_01, W_02	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation	No

		reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes	
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Monograph Course**
Module code	W4-MT-S1-25-WMJAng
Number of the ECTS credits	5
Language of instruction	English
Purpose and description of the content of education	Celem modułu jest zapoznanie studentów z wybranym działem zaawansowanej matematyki i wykształcenie umiejętności posługiwania się związanymi z nim metodami. Ponadto moduł ma na celu rozwijanie kompetencji językowych zwłaszcza w dziedzinie języka matematycznego. W zależności od wybranej tematyki przewiduje się realizację następujących treści w języku angielskim: 1. Rola i miejsce wykładanego działu matematyki oraz zarys jego rozwoju na tle historycznym. 2. Pojęcia i definicje tego działu oraz najważniejsze związki między nimi. 3. Główne twierdzenia omawianej teorii matematycznej i przykłady ich zastosowań oraz związków między nimi. 4. Wskazanie związków wykładanej teorii z innymi działami matematyki. 5. Wskazanie nierozwiązanych problemów i perspektyw dalszego rozwoju teorii.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WMonJAng_01	posiada zaawansowaną wiedzę na temat metod i technik omawianych na danym wykładzie monograficznym	K_W04	2
WMonJAng_02	potrafi stawiać i analizować problemy matematyczne w oparciu o wyłożoną teorię oraz zaprezentowane techniki badawcze	K_U01	3
WMonJAng_03	potrafi dostrzegać analogie w przedstawionej w ramach wykładu wiedzy, a także analogie z twierdzeniami i pojęciami wyłożonymi w ramach innych wykładów	K_U16	3
WMonJAng_04	potrafi posługiwać się literaturą w języku angielskim	KJ.2023_U	4
WMonJAng_05	jest gotów do szukania informacji w literaturze, zwłaszcza anglojęzycznej	K_K01	3

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a02	Lecture methods / expository methods	Monographic lecture *an exhaustive discussion of one issue, usually related to the research interests of the person teaching the course or a thorough presentation of one selected issue*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	lecture	30	exam	WMonJAng_01, WMonJAng_03, WMonJAng_04, WMonJAng_05	a02, f02
02	discussion classes	30	course work	WMonJAng_01, WMonJAng_02, WMonJAng_03, WMonJAng_04, WMonJAng_05	e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning	Yes

		outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Multimedia**
Module code	W4-MT-S1-24-Mul
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest 1. Przegląd urządzeń multimedialnych; 2. Dźwięk – rejestrowanie dźwięku na komputerze, formaty plików dźwiękowych; 3. Reprezentacja obrazu w komputerze, wyjaśnienie pojęcia grafiki rastrowej i wektorowej, zalety i wady, zastosowanie, formaty zapisu, edytory grafiki; grafika trójwymiarowa. 4. Obsługa programu GIMP, Inkspace. 5. Opracowywanie filmu w programach komputerowych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
Mul_1	zapoznaje się z możliwościami nowych urządzeń cyfrowych, objaśnia ich funkcję i towarzyszącego im oprogramowania oraz korzysta z ich możliwości	KN_I_U06 KN_I_W05	4 4
Mul_2	zna formaty plików dźwiękowych i potrafi zarejestrować dźwięk na komputerze	KN_I_U06 KN_I_W05	4 4
Mul_3	tworzy estetyczne kompozycje graficzne: tworzy kolaże, wykonuje zdjęcia i poddaje je obróbce zgodnie z przeznaczeniem, nagrywa krótkie filmy oraz poddaje je podstawowej obróbce cyfrowej	KN_I_U06	4
Mul_4	zna i projektuje modele dwuwymiarowe i trójwymiarowe, tworzy i edytuje projekty w grafice rastrowej i wektorowej, wykorzystuje różne formaty obrazów, przekształca pliki graficzne, uwzględniając wielkość i jakość obrazów	KN_I_U06 KN_I_W05	4 4
Mul_5	tworzy i edytuje dwuwymiarowe oraz trójwymiarowe wizualizacje i animacje, stosuje właściwe formaty plików graficznych	KN_I_U06	3
Mul_6	korzysta z urządzeń do nagrywania obrazów, dźwięków i filmów, w tym urządzeń mobilnych	KN_I_U06	4

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
Mul_fs_1	laboratory classes	30	course work	Mul_1, Mul_2, Mul_3, Mul_4, Mul_5, Mul_6	d01, f01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Open University Module**
Module code	OMU-2023-SS-01-OG
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	The aim of the module is to extend the students' knowledge to include specialist content that goes beyond their degree programme and to inspire them to search for information on their own. The issues addressed are on the one hand meant to arouse curiosity, and, on the other hand, to indicate the usefulness of interdisciplinary knowledge in professional life as well as in social relations and interactions. They will be connected with current research results or with specialist professional experience. The module offers diverse forms of classes, involving in both innovative and professional ways of conveying knowledge, as well as interactive methods, inspiring students to actively participate in classes. The interdisciplinary assumptions of the module allow for the classes being taught by teachers representing various scientific disciplines, resulting in a multi-faceted presentation of the issues. In addition, the module can be taught in foreign languages. The student selects the subject matter of the classes from the submitted proposals.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
01	The student understands the relationship between humanities, social sciences, natural sciences, exact mathematical sciences, technical sciences and performing, visual and other arts.	OMU.2023_U01 OMU.2023_W01	3 3
02	The student is able to combine information from various fields of knowledge, creating a coherent vision of an interdisciplinary issue.	OMU.2023_U01 OMU.2023_W01	3 3
03	The student is able to search for necessary information in various types of sources and is able to critically select them.	OMU.2023_U01 OMU.2023_W01	3 3
04	The student is able to move freely in the area of concepts pertaining to the issues discussed within the module, presented in detail in the relevant syllabuses.	OMU.2023_U01 OMU.2023_W01	3 3
05	The student develops the need and the habit of accessing source information which goes beyond the content typical to the studied degree programme.	OMU.2023_K01 OMU.2023_U01	2 2

		OMU.2023_W01	2

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	01, 02, 03, 04, 05	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the*	No

		range of activities indicated in it as required for full participation in classes	
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Organic Chemistry I**
Module code	W4-MT-S1-24-ChO1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Zadaniem modułu Chemia organiczna I jest zapoznanie studentów z najważniejszymi pojęciami z zakresu chemii organicznej. Student poznaje takie pojęcia jak: grupy funkcyjne, kryteria klasyfikacji, nomenklaturę, budowę związków organicznych i ich właściwości. Ponadto zapoznaje się z metodami otrzymywania i ich reaktywnością oraz zastosowaniami związków organicznych w życiu codziennym, przemyśle itp.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ChO1_01	Zna zasady nomenklatury związków chemicznych, zasady tworzenia wzorów sumarycznych i strukturalnych związków organicznych.	KN_Ch_W01	5
ChO1_02	Potrafi wskazać przykłady zastosowania w życiu codziennym dla różnych klas związków organicznych.	KN_Ch_W01	4
ChO1_03	Potrafi podzielić związki organiczne na klasy w zależności od obecności danych grup funkcyjnych.	KN_Ch_U01 KN_Ch_W01	3 4
ChO1_04	Potrafi objaśnić wybrane zależności pomiędzy budową molekularną a właściwościami makroskopowymi związków organicznych.	KN_Ch_U01	3
ChO1_05	Wykorzystuje pojęcia chemii organicznej do rozwiązywania problemów związanych z reaktywnością oraz otrzymywaniem związków organicznych.	KN_Ch_K01 KN_Ch_U03	3 4
ChO1_06	Zna zasady bezpieczeństwa i higieny pracy w laboratorium chemii organicznej.	KN_Ch_U08	3
ChO1_07	Potrafi współdziałać i pracować w grupie oraz odpowiada za bezpieczeństwo pracy własnej i innych.	KN_Ch_K02 KN_Ch_U08	1 3
ChO1_08	Posługuje się sprzętem laboratoryjnym i wykonuje prace laboratoryjne w pracowni chemii organicznej.	KN_Ch_W03	4
ChO1_09	Potrafi przeprowadzić proste syntezy związków organicznych w mikroskali, wdrażając zasady bezpiecznego	KN_Ch_U02	5

	postępowania z chemikaliami, opracowuje sprawozdania z przeprowadzonych eksperymentów.	KN_Ch_U06	4

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
ChO1_fs_01	workshop	20	course work	ChO1_01, ChO1_02, ChO1_03, ChO1_04, ChO1_05	a03, b04, f02
ChO1_fs_02	laboratory classes	15	course work	ChO1_04, ChO1_05, ChO1_06, ChO1_07, ChO1_08, ChO1_09	e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing*	No

		knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class	

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Organic Chemistry II**
Module code	W4-MT-S1-24-ChO2
Number of the ECTS credits	4
Language of instruction	Polish
Purpose and description of the content of education	Moduł przekazuje niezbędną wiedzę z zakresu chemii organicznej. Omawia zależność między budową związków organicznych a ich właściwościami fizycznymi i chemicznymi. Zapoznaje z reakcjami typowymi dla poszczególnych klas związków i mechanizmami ich przebiegu. Zapoznaje studenta z budową i niektórymi reakcjami wybranych związków organicznych naturalnie występujących w przyrodzie. Student uczy się technik pracy w laboratorium chemii organicznej i stosuje je w praktyce podczas syntezy prostych preparatów organicznych. Poznaje fundamenty jakościowej analizy związków organicznych. Uczy się dokumentować przeprowadzone eksperymenty.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ChO2_01	Zna zależności między budową a reaktywnością i właściwościami związków organicznych.	KN_Ch_W01	4
ChO2_02	Wykorzystuje pojęcia chemii organicznej do rozwiązywania problemów związanych z budową, reaktywnością oraz otrzymywaniem związków organicznych, interpretuje mechanizmy reakcji chemicznych związków organicznych.	KN_Ch_U01 KN_Ch_U09 KN_Ch_W02	2 3 4
ChO2_03	Zna wiadomości dotyczące wybranych metod analizy ilościowej i jakościowej związków chemicznych.	KN_Ch_W02	3
ChO2_04	Potrafi przeprowadzić syntezy wybranych związków organicznych, wdrażając zasady bezpiecznego postępowania z chemikaliami, opracowuje sprawozdania z przeprowadzonych eksperymentów.	KN_Ch_U02 KN_Ch_U06	3 3
ChO2_05	Samodzielnie wyszukuje w źródłach bibliotecznych i internetowych informacje na temat właściwości związków organicznych.	KN_Ch_U04	3
ChO2_06	Posługuje się sprzętem laboratoryjnym i wykonuje prace laboratoryjne w pracowni chemii organicznej.	KN_Ch_U08 KN_Ch_W04	3 2
ChO2_07	Interesuje się procesami chemicznymi zachodzącymi w środowisku.	KN_Ch_K01	2

ChO2_08	Jest odpowiedzialny za pracę własną i innych planując ją w sposób racjonalny i zgodny z zasadami bezpieczeństwa.	KN_Ch_U08	3

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
ChO2_fs_01	lecture	15	exam	ChO2_01, ChO2_02, ChO2_03	a01
ChO2_fs_02	laboratory classes	15	course work	ChO2_04, ChO2_05, ChO2_06, ChO2_08	e01
ChO2_fs_03	workshop	20	course work	ChO2_01, ChO2_02, ChO2_03, ChO2_07	a03, b04, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes

b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Physical education**
Module code	WF-2023
Number of the ECTS credits	0
Language of instruction	
Purpose and description of the content of education	Academic physical culture should be an integral and complementary part of the general educational program of the university. Physical culture consists of physical education, recreation, sport and tourism. The physical education module is the only area that creates the opportunity for implementing the body- and health-related values and provides a counterbalance to the mental workload of university students. It responds to the changing reality and to a large extent participates in the process of preparing the student for professional adult life as well as the life in the family and in the society. The aim of the classes in this/her module is to become familiar with and to learn the technical elements of the selected sports discipline. Also, to possibly consolidate the skills acquired at a previous stage of education. Thus, the student becomes equipped with the necessary knowledge about physical culture, its history and specific regulations. He/she becomes familiar with the organization of competitions and the recreational and tourist events. Through group cooperation and discipline, the classes develop self-esteem and instill life-long health-promoting attitudes.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
K01	The student observes the rules of "fair play" on the sports field and in everyday life. He/she promotes the social and cultural importance of sport and exercise and cultivates his/her own preferences related to physical culture.		
U01	The student uses sports facilities and equipment in a safe way, practices the correct warm-up and, if necessary, implements appropriate safety measures when exercising.		
U02	The student is able to properly analyze the level of their own physical fitness and motor skills.		
U03	The student is able to cooperate in a group and assume various roles: creating and supporting the attitudes of others, following the instructions of the coach or the teacher, as well as competition, rivalry and responsibility.		
W01	The student has knowledge pertaining to the impact of physical exercise on human health. He/she knows the body needs and the forms of physical activity needed to maintain health, as well as the consequences and risks associated with the lack of exercise.		
W02	The student knows the rules and regulation, rules of the games and the history of the chosen form of exercise.		

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
b03	Problem-solving methods	Activating method – educational games *learning content in the guise of a rule- and/or principle-based game; conducted in a deliberately arranged situation based on the description of relevant facts and processes; learners compete with one another within the framework of rules laid down by the academic teacher; varieties include simulation games – involving a simulation of real situations; decision games – based on the decision-making process and the recognition of the consequences of the decisions made (e.g., a decision tree); psychological games – increasing the emotional-volitional component of the participants' attitudes*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
e05	Practical methods	Internship *including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working conditions*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	practical classes	30	course work	K01, U01, U02, U03, W01, W02	b03, c06, e05, e06

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Physics didactics I - Primary School**
Module code	KN-F-DF1
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - fizyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela na drugim etapie edukacyjnym. W ramach modułu Dydaktyka fizyki I - szkoła podstawowa przewiduje się zapoznanie studentów z: - podstawowymi dokumentami regulującymi przebieg procesu kształcenia informatycznego uczniów szkoły podstawowej (podstawa programowa z fizyki, program nauczania, rozkład materiału, ramowy plan nauczania), - metodyką realizacji poszczególnych treści kształcenia w obrębie fizyki w zakresie programów dla szkoły podstawowej, - metodami nauczania właściwymi dla fizyki, - niekonwencjonalne metody nauczania fizyki, - rolą błędu w nauczaniu fizyki i sposobami jego wykorzystania w procesie dydaktycznym, - organizacją pracy w klasie szkolnej i grupach, - sposobami organizowania przestrzeni klasy szkolnej, - współpracą nauczyciela z rodzicami.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DF1_01	Student zna i rozumie miejsce fizyki w ramowych planach nauczania na etapie szkoły podstawowej	KN.2023_W08 KN.2023_W09	3 3
DF1_02	Student zna i rozumie podstawę programową z fizyki, cele kształcenia i treści nauczania. Zna strukturę wiedzy oraz kompetencje kluczowe i ich kształtowanie w ramach nauczania fizyki, a także realizację treści fizyki w kontekście wcześniejszego i dalszego kształcenia	KN.2023_W08 KN.2023_W09	3 3
DF1_03	Student zna i rozumie integrację wewnątrz - i międzyprzedmiotową; zagadnienia związane z programem nauczania – tworzenie i modyfikację, analizę, ocenę, dobór i zatwierdzanie oraz zasady projektowania procesu kształcenia oraz	KN.2023_W02 KN.2023_W04	2 2

	rozkładu materiału		
DF1_04	Student zna i rozumie konwencjonalne i niekonwencjonalne metody nauczania, w tym metody aktywizujące i metodę projektów, proces uczenia się przez działanie, odkrywanie lub dociekanie naukowe oraz pracę badawczą ucznia, a także zasady doboru metod nauczania typowych dla fizyki	KN.2023_W02 KN.2023_W04 KN.2023_W06 KN.2023_W15	4 4 4 3
DF1_05	Student zna i rozumie metodykę realizacji poszczególnych treści kształcenia w obrębie fizyki – rozwiązania merytoryczne i metodyczne, dobre praktyki, dostosowanie oddziaływań do potrzeb i możliwości uczniów lub grup uczniowskich o różnym potencjale i stylu uczenia się, typowe dla fizyki błędy uczniowskie, ich rolę i sposoby wykorzystania w procesie dydaktycznym.	KN.2023_W02 KN.2023_W14 KN.2023_W15	2 2 2
DF1_06	Student zna i rozumie metody kształcenia w odniesieniu do fizyki, a także znaczenie kształtowania postawy odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej.	KN.2023_W02 KN.2023_W14 KN.2023_W15	4 2 4
DF1_07	Student zna i rozumie kompetencje merytoryczne, dydaktyczne i wychowawcze nauczyciela, w tym dostosowywania sposobu komunikowania się do poziomu rozwoju uczniów i stymulowania aktywności poznawczej uczniów; zna rolę nauczyciela jako popularyzatora wiedzy oraz znaczenie współpracy nauczyciela w procesie dydaktycznym z rodzicami lub opiekunami uczniów, pracownikami szkoły i środowiskiem pozaszkolnym	KN.2023_W03	4
DF1_08	Student zna i rozumie organizację pracy w klasie szkolnej i grupach: potrzebę indywidualizacji nauczania, zagadnienie nauczania interdyscyplinarnego, formy pracy specyficzne dla fizyki: wycieczki, zajęcia terenowe i laboratoryjne, doświadczenia i konkursy oraz zagadnienia związane z pracą domową	KN.2023_W02 KN.2023_W04 KN.2023_W05 KN.2023_W06 KN.2023_W15	2 2 2 3 4
DF1_09	Student zna i rozumie sposoby organizowania przestrzeni klasy szkolnej: środki dydaktyczne (podręczniki i pakiety edukacyjne), pomoce dydaktyczne – dobór i wykorzystanie zasobów edukacyjnych, edukacyjne zastosowania mediów i technologii informacyjno-komunikacyjnej; myślenie komputacyjne w rozwiązywaniu problemów w zakresie fizyki	KN.2023_W04 KN.2023_W15	3 4
DF1_10	Student potrafi identyfikować typowe zadania szkolne z celami kształcenia, w szczególności z wymaganiami ogólnymi podstawy programowej, oraz z kompetencjami kluczowymi	KN.2023_U02 KN.2023_U07	3 3
DF1_11	Student potrafi przeanalizować rozkład materiału	KN.2023_U02	4
DF1_12	Student potrafi identyfikować powiązania treści fizyki z innymi treściami nauczania	KN.2023_U03 KN.2023_U07	2 3
DF1_13	Student potrafi dostosować sposób komunikacji do poziomu rozwojowego uczniów	KN.2023_U03 KN.2023_U15	3 4
DF1_14	Student potrafi kreować sytuacje dydaktyczne służące aktywności i rozwojowi zainteresowań uczniów oraz popularyzacji wiedzy	KN.2023_U03 KN.2023_U06 KN.2023_U07	4 4 4
DF1_15	Student potrafi podejmować skuteczną współpracę w procesie dydaktycznym z rodzicami lub opiekunami uczniów, pracownikami szkoły i środowiskiem pozaszkolnym	KN.2023_U05	4

DF1_16	Student potrafi dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne	KN.2023_U02 KN.2023_U03 KN.2023_U12	4 4 1
DF1_17	Student potrafi rozpoznać typowe dla nauczanego przedmiotu lub prowadzonych zajęć błędy uczniowskie i wykorzystać je w procesie dydaktycznym	KN.2023_U03	3
DF1_18	Student jest gotów do adaptowania metod pracy do potrzeb i różnych stylów uczenia się uczniów	KN.2023_KS02 KN.2023_KS04	2 2
DF1_19	Student jest gotów popularyzowania wiedzy wśród uczniów i w środowisku szkolnym oraz pozaszkolnym	KN.2023_KS02	3
DF1_20	Student jest gotów promowania odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych oraz poszanowania praw własności intelektualnej	KN.2023_KS01 KN.2023_KS06	4 2
DF1_21	Student jest gotów do kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów	KN.2023_KS03 KN.2023_KS04	3 2

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b05	Problem-solving methods	Activating method – seminar / proseminar *a seminar method; usually an oral presentation of a previously studied/diagnosed problem delivered on a forum; it aims at provoking a discussion concerning the results of research work; a type of conference, course or training session modelled on seminar classes*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*

c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text

		searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
DF1_fs_01	workshop	15	course work	DF1_01, DF1_02, DF1_03, DF1_04, DF1_05, DF1_06, DF1_07, DF1_08, DF1_09, DF1_10, DF1_11, DF1_12, DF1_13, DF1_14	a03, b01, b02, b04, c02, c06, c07, d01, d02, d03, e01, e02, f01, f02
DF1_fs_02	laboratory classes	30	course work	DF1_01, DF1_02, DF1_03, DF1_04, DF1_05, DF1_06, DF1_07, DF1_08, DF1_09, DF1_10, DF1_11, DF1_12, DF1_13, DF1_14, DF1_15, DF1_16, DF1_17, DF1_18, DF1_19, DF1_20, DF1_21	a03, b01, b02, b04, b05, b08, c02, c06, c07, d01, d02, d03, e01, e02, e06, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the*	Yes

		class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.	
b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Physics didactics II - Primary School**
Module code	KN-F-DF2
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zintegrowanie dla potrzeb studenta wiedzy z różnych dyscyplin (jak dydaktyka ogólna, psychologia, pedagogika, a przede wszystkim - fizyka) tak, aby ułatwić mu zrozumienie tego procesu w stopniu umożliwiającym samodzielne jego kreowanie jako nauczyciela na drugim etapie edukacyjnym. W ramach modułu Dydaktyka fizyki II - szkoła podstawowa przewiduje się realizację następujących zagadnień: - diagnoza, ocena, kontrola postępów uczniów, - rozwijaniem u uczniów zdolności poznawczych i społeczno-emocjonalnych, - kształtowaniem systemu wartości uczniów, - warsztat pracy nauczyciela.
List of modules that must be completed before starting this module (if necessary)	[KN-F-DF1] Physics didactics I - Primary School

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
DF2_01	Student zna i rozumie rolę diagnozy, kontroli i oceniania w pracy dydaktycznej; ocenianie i jego rodzaje: ocenianie bieżące, semestralne i roczne, ocenianie wewnętrzne i zewnętrzne; funkcje oceny	KN.2023_W02 KN.2023_W04 KN.2023_W07 KN.2023_W15	3 3 4 4
DF2_02	Student zna i rozumie sposoby konstruowania testów, sprawdzianów oraz innych narzędzi przydatnych w procesie oceniania uczniów w ramach fizyki	KN.2023_W02 KN.2023_W07	3 3
DF2_03	Student zna i rozumie diagnozę wstępną grupy uczniowskiej i każdego ucznia w kontekście fizyki oraz sposoby wspomagania rozwoju poznawczego uczniów; potrzebę kształtowania pojęć, postaw, umiejętności praktycznych, w tym rozwiązywania problemów, i wykorzystywania wiedzy; metody i techniki skutecznego uczenia się; metody strukturyzacji wiedzy oraz konieczność powtarzania i utrwalania wiedzy i umiejętności	KN.2023_W02 KN.2023_W04 KN.2023_W07	2 2 4
DF2_04	Student zna i rozumie znaczenie rozwijania umiejętności osobistych i społeczno-emocjonalnych uczniów: potrzebę	KN.2023_W01	2

	kształtowania umiejętności współpracy uczniów, w tym grupowego rozwiązywania problemów oraz budowania systemu wartości i rozwijania postaw etycznych uczniów, a także kształtowania kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_W02 KN.2023_W12	2 3
DF2_05	Student zna i rozumie warsztat pracy nauczyciela, właściwe wykorzystanie czasu lekcji przez ucznia i nauczyciela; zagadnienia związane ze sprawdzaniem i ocenianiem jakości kształcenia oraz jej ewaluacją, a także z koniecznością analizy i oceny własnej pracy dydaktyczno-wychowawczej	KN.2023_W03	3
DF2_06	Student zna i rozumie potrzebę kształtowania u ucznia pozytywnego stosunku do nauki, rozwijania ciekawości, aktywności i samodzielności poznawczej, logicznego i krytycznego myślenia, kształtowania motywacji do uczenia się fizyki i nawyków systematycznego uczenia się, korzystania z różnych źródeł wiedzy, w tym z Internetu	KN.2023_W03	4
DF2_07	Student potrafi merytorycznie, profesjonalnie i rzetelnie oceniać pracę uczniów wykonywaną w klasie i w domu	KN.2023_U03 KN.2023_U10	4 4
DF2_08	Student potrafi skonstruować sprawdzian służący ocenie danych umiejętności uczniów	KN.2023_U10 KN.2023_U11	5 4
DF2_09	Student potrafi przeprowadzić wstępną diagnozę umiejętności ucznia	KN.2023_U03 KN.2023_U11	4 4
DF2_10	student jest gotów do rozwijania u uczniów ciekawości, aktywności i samodzielności poznawczej oraz logicznego i krytycznego myślenia	KN.2023_KS04	3
DF2_11	Student jest gotów do kształtowania nawyku systematycznego uczenia się i korzystania z różnych źródeł wiedzy, w tym z Internetu	KN.2023_KS04	3
DF2_12	Student jest gotów do stymulowania uczniów do uczenia się przez całe życie przez samodzielną pracę	KN.2023_KS04	3
DF2_13	Student jest gotów do budowania systemu wartości i rozwijania postaw etycznych uczniów oraz kształtowania ich kompetencji komunikacyjnych i nawyków kulturalnych	KN.2023_KS01 KN.2023_KS03	4 3
DF2_14	Student jest gotów do zachęcania uczniów do podejmowania prób badawczych	KN.2023_KS02 KN.2023_KS04	3 2

9. Methods of conducting classes

Code	Category	Name (description)
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*

b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e02	Practical methods	Production exercise – workshop *an activity involving the creation of an object/product according to the rules/principles/description provided by the academic teacher acting as the workshop master*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on “replacement” material*
f01	Methods of self-learning	Self-education

		a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
DF2_fs_01	laboratory classes	15	course work	DF2_01, DF2_02, DF2_03, DF2_04, DF2_05, DF2_06, DF2_07, DF2_08, DF2_09, DF2_10, DF2_11, DF2_12, DF2_13, DF2_14	b01, b02, b04, b08, b09, c02, c06, c07, d02, d03, e01, e02, e06, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes

b03	Consulting the curriculum and the organization of classes	Consulting the schedule *getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the pursued study programme*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher’s comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Physics lab I, part 1**
Module code	KN-F-PrF-CZ1
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Wykonanie zestawów ćwiczeń, które uczą studenta prowadzenia badań metodami fizycznymi, zrozumienia zjawisk fizycznych z zakresu mechaniki, elektryczności i magnetyzmu. Student ma możliwość doświadczalnego potwierdzenia teoretycznej wiedzy nabytej na warsztatach. Potrafi wykonać, opisać i zinterpretować pomiary wielkości fizycznych. Wykorzystuje metody statystycznej analizy błędów pomiarowych do opracowania danych eksperymentalnych. Potrafi samodzielnie zaplanować i zaprojektować układ pomiarowy z wykorzystaniem materiałów codziennego użytku, wykonać pomiary z jego wykorzystaniem i opracować wyniki. Posiada umiejętność samodzielnego pogłębiania wiedzy fizycznej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PrF1_01	posiada wiedzę z poszczególnych działów fizyki klasycznej obejmującą: mechanikę, elektryczność i magnetyzm	KN_NDP_F_S1_W01 KN_NDP_F_S1_W02 KN_NDP_F_S1_W03	5 5 5
PrF1_02	potrafi przeprowadzić pomiary i eksperymenty fizyczne oraz analizować ich wyniki	KN_NDP_F_S1_U03 KN_NDP_F_S1_U08	5 5
PrF1_03	potrafi wyjaśnić na gruncie praw fizyki i teorii fizycznych zjawiska fizyczne obserwowane podczas wykonywania ćwiczeń laboratoryjnych	KN_NDP_F_S1_U02	5
PrF1_04	zna główne zagadnienia statystyki i analizy danych	KN_NDP_F_S1_W06	4
PrF1_05	potrafi zastosować aparat matematyczny do rozwiązania problemów fizycznych	KN_NDP_F_S1_U03 KN_NDP_F_S1_U04	5 5
PrF1_06	Zna i przestrzega podstawowych zasad bezpieczeństwa i higieny pracy	KN_NDP_F_S1_W05	5

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*

e08	Practical methods	Practice-as-research *also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PrF1_fs_01	laboratory classes	20	course work	PrF1_01, PrF1_02, PrF1_03, PrF1_04, PrF1_05, PrF1_06	b02, b04, c02, c06, c07, d01, d02, d03, e01, e06, e08, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
d01	Consulting the results of the verification of	Analysis of the corrective feedback provided by the academic teacher on the results of the	Yes

	learning outcomes	verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Physics lab I, part 2**
Module code	KN-F-PrF-CZ2
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Wykonanie zestawów ćwiczeń, które uczą studenta prowadzenia badań metodami fizycznymi, zrozumienia zjawisk fizycznych z zakresu termodynamiki, fal, optyki i budowy materii. Student ma możliwość doświadczalnego potwierdzenia teoretycznej wiedzy nabytej na warsztatach. Potrafi wykonać, opisać i zinterpretować pomiary podstawowych wielkości fizycznych. Wykorzystuje metody statystycznej analizy błędów pomiarowych do opracowania danych eksperymentalnych. Potrafi samodzielnie zaplanować i zaprojektować układ pomiarowy z wykorzystaniem materiałów codziennego użytku, wykonać pomiary z jego wykorzystaniem i opracować wyniki. Posiada umiejętność samodzielnego pogłębiania wiedzy fizycznej.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PrF2_01	posiada wiedzę z poszczególnych działów fizyki klasycznej obejmującą: termodynamikę, fale mechaniczne, optykę i budowę materii	KN_NDP_F_S1_W01 KN_NDP_F_S1_W02 KN_NDP_F_S1_W03	5 5 5
PrF2_02	potrafi przeprowadzić pomiary i eksperymenty fizyczne oraz analizować ich wyniki	KN_NDP_F_S1_U03 KN_NDP_F_S1_U08	5 5
PrF2_03	potrafi wyjaśnić na gruncie praw fizyki i teorii fizycznych zjawiska fizyczne obserwowane podczas wykonywania ćwiczeń laboratoryjnych	KN_NDP_F_S1_U02	5
PrF2_04	zna główne pojęcia statystyki i analizy danych	KN_NDP_F_S1_W06	4
PrF2_05	potrafi zastosować aparat matematyczny do rozwiązania problemów fizycznych	KN_NDP_F_S1_U03 KN_NDP_F_S1_U04	5 5
PrF2_06	zna i stosuje podstawowe zasady bezpieczeństwa i higieny pracy	KN_NDP_F_S1_W05	5

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a*

		formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e08	Practical methods	Practice-as-research *also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PrF2_fs_01	laboratory classes	30	course work	PrF2_01, PrF2_02, PrF2_03, PrF2_04, PrF2_05, PrF2_06	a03, a05, b02, b04, b08, b09, c02, c07, d01, d02, d03, e01, e08, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Preparation for Work in Primary School**
Module code	W4-MT-S1-25-PPSTut
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Zgodnie z ROZPORZĄDZENIEM MINISTRA NAUKI I SZKOLNICTWA WYŻSZEGO z dnia 25 lipca 2019 r. kształcenie na studiach przygotowujących do wykonywania zawodu nauczyciela przedmiotu obejmuje przygotowanie dydaktyczne do nauczania pierwszego przedmiotu – grupa zajęć D. Moduł ten lokuje się w grupie zajęć D: Szkoła jako mój podstawowy zakład pracy – pierwszy rok nauczania. Przygotowanie się nauczyciela do lekcji - podstawa programowa, rozkład materiału, podręcznik, budowa scenariusza (konspektu), prezentacja multimedialna, notatka hospitacyjna.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PPSTut_ 01	zna i rozumie miejsce matematyki jako przedmiotu w ramowych planach nauczania na II etapie edukacyjnym	KN.2023_W06 KN.2023_W14	3 3
PPSTut_02	zna i rozumie podstawę programową z matematyki, cele kształcenia i treści nauczania tego przedmiotu na II etapie edukacyjnym, przedmiot matematyka w kontekście wcześniejszego i dalszego kształcenia, strukturę wiedzy w zakresie matematyki jako przedmiotu nauczania oraz kompetencje kluczowe i ich kształtowanie w ramach nauczania matematyki	KN.2023_W06 KN.2023_W14 KN.2023_W15	3 3 3
PPSTut_03	potrafi identyfikować typowe zadania szkolne z celami kształcenia, w szczególności z wymaganiami ogólnymi podstawy programowej, oraz z kompetencjami kluczowymi	KN.2023_U02 KN.2023_U04	2 2
PPSTut_04	potrafi dostosować sposób komunikacji do poziomu rozwojowego uczniów; dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne	KN.2023_U02 KN.2023_U03 KN.2023_U04 KN.2023_U07	2 2 2 2

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the*

		variant versions of a procedure/product/work

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	workshop	30	course work	PPSTut_ 01, PPSTut_02, PPSTut_03, PPSTut_04	a05, b04, b08, c07, d01, d02, d03, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic*	No

		teacher, their verification or correction resulting in completing the task with at least the minimum passing grade	

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Probability Theory**
Module code	W4-MT-S1-25-RPra
Number of the ECTS credits	4
Language of instruction	Polish
Purpose and description of the content of education	Moduł Rachunek prawdopodobieństwa ma na celu rozwijanie umiejętności swobodnego posługiwania się pojęciami oraz narzędziami tej dziedziny, ze szczególnym uwzględnieniem teorii zmiennych losowych i ich rozkładów. Przewiduje się realizację następujących treści programowych: 1. Pojęcie przestrzeni probabilistycznej (model klasyczny, model geometryczny i inne), własności miary probabilistycznej, prawdopodobieństwo warunkowe i całkowite, wzór Bayesa, niezależność zdarzeń, lemat Borela-Cantellego. 2. Pojęcie zmiennej losowej, jej rozkładu i parametrów rozkładu (dystrybuanta, wartość oczekiwana, wariancja, odchylenie standardowe, momenty). 3. Przykłady zmiennych losowych o rozkładach dyskretnych i absolutnie ciągłych. 4. Nierówności związane z momentami. 5. Rozkład borelowskich przekształceń jednowymiarowej zmiennej losowej. 6. Zmienne losowe wielowymiarowe i ich rozkłady. 7. Macierz kowariancji, współczynnik korelacji. 8. Niezależność zmiennych losowych. 9. Rozkład sumy i iloczynu niezależnych zmiennych losowych. 10. Rodzaje zbieżności ciągów zmiennych losowych: słaba, stochastyczna, prawie na pewno. 11. Centralne twierdzenia graniczne i prawa wielkich liczb: zastosowania do szacowania prawdopodobieństw.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
RPra_1	Zna główne pojęcia i twierdzenia z teorii prawdopodobieństwa.	K_W02 K_W03 K_W04	2 3 4

RPra_2	Potrafi konstruować odpowiednie do opisów modele probabilistyczne i definiować zmienne losowe.	K_U01 K_U11	4 3
RPra_3	Potrafi wyznaczać dystrybuantę zmiennej losowej o danym rozkładzie (dyskretnym lub absolutnie ciągłym). Znając dystrybuantę zmiennej losowej potrafi wyznaczać jej rozkład.	K_U01 K_U03 K_U11	4 4 3
RPra_4	Potrafi obliczać wartość oczekiwaną i wariancję zmiennych losowych.	K_U01 K_U03 K_U11	4 3 3
RPra_5	Zna definicję niezależności zmiennych losowych, a także odpowiednie kryteria pozwalające weryfikować, czy zmienne losowe są niezależne.	K_W03 K_W04 K_W05	2 4 1
RPra_6	Potrafi wyznaczać rozkłady funkcji zmiennych losowych, w szczególności rozkład sumy niezależnych zmiennych losowych.	K_U01 K_U03 K_U11	4 4 4
RPra_7	Zna prawa wielkich liczb oraz centralne twierdzenie graniczne, rozumie ich intuicyjne podstawy i ma świadomość ich praktycznych zastosowań.	K_W01 K_W02 K_W03 K_W04	4 2 3 4

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
e01	Practical methods	Laboratory exercise / experiment

		[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	lecture	30	exam	RPra_1, RPra_2, RPra_3, RPra_4, RPra_5, RPra_6, RPra_7	a01, a05, b04
02	discussion classes	15	course work	RPra_1, RPra_2, RPra_3, RPra_4, RPra_5, RPra_6, RPra_7	a05, b04, d02, e01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning	Yes

		outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Probability Theory A**
Module code	W4-MT-S1-25-RPraA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Moduł „Rachunek prawdopodobieństwa A” ma na celu rozwijanie i pogłębianie umiejętności swobodnego posługiwania się pojęciami oraz narzędziami teorii prawdopodobieństwa, zdobytymi w ramach modułu „Wstęp do rachunku prawdopodobieństwa A”. Przewiduje się realizację następujących treści programowych: 1. Kowariancja pary zmiennych losowych i macierz kowariancji wektora losowego. 2. Wielowymiarowy rozkład normalny. 3. Funkcja charakterystyczna - przypomnienie i poglębienie zdobytej wiedzy. 4. Różne rodzaje zbieżności zmiennych losowych i zależności między nimi. 5. Związek między zbieżnością wg. rozkładu i z punktową zbieżnością funkcji charakterystycznych. 6. Centralne twierdzenie graniczne. 7. Prawa wielkich liczb. 8. Warunkowa wartość oczekiwana. 9. Martyngały z czasem dyskretnym. 10. Dyskretne łańcuchy Markowa.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-WRPrA] Introduction to Probability Theory A

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
RPraA_01	Zna pojęcie kowariancji pary zmiennych losowych oraz macierzy kowariancji wektora losowego i jej najważniejsze własności. Rozumie różnicę między niezależnością i brakiem korelacji zmiennych losowych.	K_W04	4
RPraA_02	Potrafi wyznaczyć macierz kowariancji wektora losowego o zadanym rozkładzie (ciągłym lub dyskretnym) oraz znaleźć macierz kowariancji jego dowolnego przekształcenia liniowego.	K_U03 K_U04 K_U11	3 3 5
RPraA_03	Zna pojęcie wielowymiarowego rozkładu normalnego oraz postać jego gęstości. Wie, jak wyznaczyć wektor wartości	K_W01	1

	oczekiwanych i macierz kowariancji rozkładu normalnego o zadanej gęstości, jak również gęstość takiego rozkładu na podstawie znajomości tych parametrów.	K_W04	4
RPraA_04	Zna definicje różnych rodzajów zbieżności zmiennych losowych oraz implikacje między nimi, ponadto zna przykłady ilustrujące brak implikacji w określonym kierunku.	K_W04 K_W05	4 5
RPraA_05	Zna centralne twierdzenie granicznego Lindeberga-Levy'ego (dla ciągu niezależnych zmiennych losowych o jednakowym rozkładzie) i najważniejsze kryteria gwarantujące spełnienie mocnego i słabego prawa wielkich liczb. Ma właściwe intuicje co do tych twierdzeń i rozumie ich w znacznie w statystyce.	K_W01 K_W03 K_W04	2 4 4
RPraA_06	Potrafi stosować centralne twierdzenie graniczne do wyznaczania przybliżonych prawdopodobieństw zdarzeń opisanych przez sumy niezależnych zmiennych losowych. W określonych przypadkach potrafi wykazać, że dany ciąg zmiennych losowych spełnia mocne / słabe prawo wielkich liczb, bądź udowodnić, że prawo to nie zachodzi.	K_U01 K_U03 K_U09 K_U11	4 3 3 5
RPraA_07	Wie i rozumie czym jest warunkowa wartość oczekiwana zmiennej losowej względem σ-ciała (w szczególności generowanego przez wektor losowy), jak również zna jej własności. Wie, jak sformułować uogólnioną definicję prawdopodobieństwa warunkowego i warunkowego rozkładu zmiennej losowej (względem wektora losowego).	K_W01 K_W02 K_W04	1 2 4
RPraA_08	Potrafi wyznaczyć warunkową wartość oczekiwaną E[f(X,Y)|Y] dla danego wektora losowego (X,Y) o rozkładzie ciągłym lub dyskretnym, jak również wyznaczyć wartość oczekiwaną zmiennej f(X) przy danym rozkładzie warunkowym zmiennej X.	K_U03 K_U09 K_U11	3 3 5
RPraA_09	Zna pojęcia filtracji przestrzeni probabilistycznej, momentu stopu, martyngału, podmartyngału oraz nadmartyngału (z czasem dyskretnym), rozumie intuicje stojące za tym pojęciami oraz potrafi wskazać ilustrujące je przykłady. Ponadto, zna wybrane twierdzenia dotyczące (pod/nad)martyngałów.	K_W04 K_W05	4 3
RPraA_10	Potrafi zbadać, czy (lub dla jakich wartości parametrów) dany ciąg zmiennych losowych jest (pod/nad) martyngałem względem zadanej filtracji.	K_U01 K_U09 K_U11	2 4 5
RPraA_11	Zna pojęcie jednorodnego (w czasie) łańcucha Markowa, jego rozkładu początkowego, macierzy przejścia oraz jej najważniejsze własności, jak również twierdzenie o istnieniu łańcucha Markowa o zadanych charakterystykach. Wie, jak klasyfikuje się stany łańcucha Markowa ze względu na charakter komunikacji między nimi, szanse i okresy powrotu do poszczególnych stanów oraz zna najważniejsze kryteria pozwalające na dokonanie tej klasyfikacji. Wie, czym jest rozkład stacjonarny łańcucha Markowa oraz zna twierdzenie ergodyczne dla nieprzywiedlnych i nieokresowych łańcuchów Markowa o skończonej przestrzeni stanów.	K_W01 K_W02 K_W03 K_W04	2 3 3 5
RPraA_12	Potrafi wskazać reprezentatywne przykłady jednorodnych łańcuchów Markowa oraz sprawdzić, czy dany ciąg zmiennych losowych ma własność Markowa. W wybranych modelach potrafi dokonać klasyfikacji stanów (ze względu na komunikacje między nimi oraz szanse i okresy powrotu do poszczególnych stanów), wskazać klasy zamknięte, zbadać ich nieprzywiedlność oraz wyznaczyć rozkład stacjonarny łańcucha.	K_U01 K_U04 K_U09 K_U11	3 3 3 5
RPraA_13	Potrafi użyć formalizmu matematycznego do budowy i analizy modeli probabilistycznych w innych dziedzinach nauk.	K_U01 K_U02	3 2
RPraA_14	Potrafi w sposób zrozumiały, w mowie i piśmie, przedstawiać poprawne rozumowania matematyczne oraz formułować	K_U01	5

	twierdzenia i definicje z zakresu teorii prawdopodobieństwa.	K_U02 K_U13	2 2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
RPraA_fs_1	lecture	30	exam	RPraA_01, RPraA_04, RPraA_05, RPraA_06, RPraA_07, RPraA_09, RPraA_10, RPraA_11, RPraA_12, RPraA_13, RPraA_14	a01, a05, b02, b04
RPraA_fs_2	discussion classes	30	course work	RPraA_01, RPraA_02, RPraA_03, RPraA_04,	a05, b04, d02, e01, f02

				RPraA_05, RPraA_06, RPraA_07, RPraA_08, RPraA_09, RPraA_10, RPraA_11, RPraA_12, RPraA_13, RPraA_14	

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	No
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum*	Yes

		passing grade	

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Proseminar**
Module code	W4-MT-S1-25-Pro
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Proseminarium przygotowuje studenta do egzaminu dyplomowego oraz do realizacji końcowej pracy pisemnej. Celem Proseminarium jest zapoznanie studenta z wymaganiami egzaminu dyplomowego, ustalenie tematyki jego końcowej pracy pisemnej zgodnej z „Zakresem merytorycznym egzaminu dyplomowego” oraz wprowadzenie studenta w wybraną tematykę pracy końcowej. Proseminarium stanowi pomoc w kształtowaniu u studentów umiejętności systematycznej pracy nad zadanym projektem, aktywnym uczestnictwie w spotkaniach grup roboczych oraz umiejętności publicznej prezentacji uzyskanych wyników.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
Pro_01	rozumie znaczenie założeń i dowodów twierdzeń matematycznych związanych z tematyką pracy końcowej	K_W03	4
Pro_02	potrafi posługiwać się literaturą w celu przygotowania opracowania dotyczącego tematyki pracy końcowej	K_U16	4
Pro_03	rozumie potrzebę formułowania pytań służących pogłębianiu własnej wiedzy związanej z tematyką pracy końcowej	K_U15 K_U16	1 4
Pro_04	potrafi przedstawić ustnie, na forum grupy, przygotowane opracowanie zagadnień matematycznych	K_U01	4
Pro_05	jest gotów do szukania informacji w literaturze oraz doceniania uczciwości intelektualnej	K_K01 K_K04	4 2
Pro_06	rozumie potrzebę pogłębiania wiedzy związanej z tematyką pracy końcowej znając ograniczenia własnej wiedzy w tym zakresie	K_K01	5

9. Methods of conducting classes

Code	Category	Name (description)
b05	Problem-solving methods	Activating method – seminar / proseminar

		a seminar method; usually an oral presentation of a previously studied/diagnosed problem delivered on a forum; it aims at provoking a discussion concerning the results of research work; a type of conference, course or training session modelled on seminar classes
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
[Pro_fs_1	proseminar	15	course work	Pro_01, Pro_02, Pro_03, Pro_04, Pro_05, Pro_06	b05, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Robotics**
Module code	W4-MT-S1-25-Rob
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest przekazanie wiedzy i umiejętności dotyczących programowania mikrokontrolerów oraz wykorzystania czujników. Studenci zapozna się z budową i funkcjonowaniem bezprzewodowych i przewodowych technologii wymiany danych. Dodatkowo poznają zastosowanie wybranych praw fizyki. Ponadto studenci będą zaznajomieni z nauką, technologią, inżynierią, sztuką i matematyką w edukacji STEAM jako punktami dostępu do ukierunkowania uczniów na dociekanie, dialog i krytyczne myślenie.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
Rob_01	knows robots sensors and their software	KN_I_W04	4
Rob_02	is able to construct, configure and run a system containing sensors	KN_I_U05 K_U07 K_U08 K_U09	5 3 5 5
Rob_03	The student is able to work in a group.	KN.2023_KS07 KN_I_K01	1 3
Rob_04	understands the need to improve.	KN_I_K02	3
Rob_05	knows the rules of safety in the computer laboratory.	KN_I_W10	5
Rob_06	complies with occupational health and safety rules in the computer lab	KN_I_U12	5
Rob_07	is able to use robotics classes in working with children with various educational needs.	KN.2023_U02 KN.2023_U03 KN.2023_U04	1 1 1

		KN.2023_U12 KN.2023_U15 KN_I_U11	1 1 2

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
b07	Problem-solving methods	Activating methods: a case study *a comprehensive description of a phenomenon connected with the selected discipline; reflecting the reality, presenting the 'what', 'where' and 'how' of the phenomenon, i.e., all of its key aspects to be discussed in class; used as a reproduction, presentation, discussion or diagnosis of factors that shape the phenomenon or interact with it; an in-depth qualitative analysis and evaluation of a selected phenomenon*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
Rob	laboratory classes	30	course work	Rob_01, Rob_02, Rob_03, Rob_04, Rob_05, Rob_06, Rob_07	b07, b08, d01, d03, e06, e07, f03

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**School geometry**
Module code	W4-MT-S1-25-GSzk
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem przedmiotu jest zapoznanie studentów z zagadnieniami geometrii klasycznej, w zakresie niezbędnym do nauczania geometrii w szkole i przygotowywania uczniów do startów w konkursach i olimpiadach przedmiotowych w zakresie szkoły podstawowej. W ramach kursu przewiduje się realizację następujących treści programowych: 1.Geometria w szkole na etapie przeddefinicyjnym. 2.Figury i bryły geometryczne, wielokąty i wielościany oraz ich własności. 3.Przekształcenia geometryczne. 4.Dowodzenie w geometrii szkolnej. 5.Geometria euklidesowa a geometrie nieeuklidesowe.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
GSzk_01	student zna główne pojęcia (obiekty, przekształcenia, twierdzenia) geometryczne, potrafi się nimi posługiwać w mowie i piśmie	K_U01 K_W02 K_W03 K_W04 K_W05	3 2 2 2 2
GSzk_02	student zna schematy dowodów kluczowych twierdzeń omówionych na wykładzie	K_U01 K_W02 K_W03 K_W04	2 2 2 1
GSzk_03	student wie o istnieniu geometrii nieeuklidesowych	K_W04	3

GSzk_04	student zna fundamenty geometrii euklidesowej, zna własności figur i brył geometrycznych	KN.2023_W14	3
GSzk_05	student potrafi zastosować poznane narzędzia geometryczne w zadaniach i sytuacjach problemowych	KN.2023_U03	2

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
f01	Methods of self-learning	Self-education

		a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	lecture	15	course work	GSzk_01, GSzk_02, GSzk_03, GSzk_04	a03, a05, b02, c07, d01, f01, f02
02	discussion classes	15	course work	GSzk_01, GSzk_04, GSzk_05	a05, b08, c06, d03, e01, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/	Yes

		examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Specialized Module**
Module code	W4-MT-S1-25-MSpe
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Celem Modułu specjalistycznego jest przedstawienie wiedzy teoretycznej i specjalistycznej z zakresu matematyki poprzez zapoznanie studentów z zaawansowanymi pojęciami, twierdzeniami oraz ich dowodami. Moduł kładzie nacisk na zastosowanie zdobytej wiedzy do rozwiązywania problemów praktycznych oraz na wskazanie interdyscyplinarnych powiązań i perspektyw rozwoju danej teorii. Przewiduje się realizację następujących treści kształcenia. 1. Rola i miejsce problematyki modułu w historycznym rozwoju nauk ścisłych, w tym matematyki. 2. Wprowadzenie zaawansowanych pojęć i definicji związanych ze specjalistyczną teorią omawianą w czasie zajęć. 3. Sformułowanie i udowodnienie twierdzeń danego modułu specjalistycznego. 4. Pokazanie możliwości stosowania zdobytej wiedzy teoretycznej do rozwiązywania konkretnych problemów wywodzących się z zastosowań. 5. Wskazanie powiązań omawianych zagadnień z różnymi dziedzinami nauki. 6. Omówienie kierunków dalszego rozwoju problematyki modułu i ich znaczenia w rozwoju nauki i postępie cywilizacyjnym.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
MSpe_01	zna i rozumie wybrane twierdzenia omawiane w ramach modułu oraz ich dowody, a także potrafi wskazać ich znaczenie teoretyczne i praktyczne	K_W03	2
MSpe_02	zna i rozumie zaawansowane pojęcia i definicje z zakresu specjalistycznej teorii matematycznej oraz jej miejsce w rozwoju nauk ścisłych oraz ma uporządkowaną wiedzę na temat zastosowań omawianej teorii w różnych dziedzinach nauki oraz zna kierunki jej dalszego rozwoju	K_W01	4
MSpe_03	potrafi formułować i dowodzić twierdzenia związane z omawianą teorią, wykorzystując przy tym właściwe metody i techniki matematyczne	K_U01	3
MSpe_04	potrafi samodzielnie analizować zaawansowane problemy matematyczne, stosując poznane twierdzenia i definicje, a w razie potrzeby planować proces poszerzania wiedzy z wykorzystaniem odpowiednio dobranych źródeł i dążyć do jego realizacji	K_U16	2

MSpe_05	potrafi zastosować zdobytą wiedzę teoretyczną do opisu i rozwiązywania praktycznych problemów matematycznych i naukowych, także w kontekście interdyscyplinarnym	K_U14	4
MSpe_06	jest gotów aktywnie poszukiwać brakujących informacji w różnych źródłach oraz doceniać uczciwość intelektualną	K_K01 K_K04	3 2

9. Methods of conducting classes

Code	Category	Name (description)
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
MSpe_fs_1	lecture	30	exam	MSpe_01, MSpe_02, MSpe_03	b01
MSpe_fs_2	laboratory classes	30	course work	MSpe_04, MSpe_05, MSpe_06	b04, b08, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus	Yes

		agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation	
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Specialized Workshops**
Module code	W4-MT-S1-25-WSpe
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu Warsztaty specjalistyczne jest kształcenie umiejętności wykorzystywania wiedzy teoretycznej w typowych zastosowaniach matematyki poprzez rozwiązywanie konkretnych problemów związanych z daną specjalnością. Przewiduje się realizację następujących treści kształcenia. 1. Rola matematyki we współczesnym świecie oraz jej zastosowań w kontekście problemów cywilizacyjnych. 2. Zastosowanie formalizmu matematycznego w poprawnym rozumowaniu oraz w formułowaniu problemów badawczych. 3. Rozpoznawanie problemów badawczych i przykłady ich rozwiązań. 4. Sposoby wykorzystywania wiedzy teoretycznej w wybranych specjalistycznych zastosowaniach matematyki. 5. Wykorzystanie różnych źródeł informacji do poszerzania posiadanej wiedzy z dbałością o uczciwość intelektualną i odpowiedzialność.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
WSpec_1	zna i rozumie znaczenie matematyki we współczesnym świecie oraz jej zastosowania w rozwiązywaniu problemów cywilizacyjnych	K_W01	4
WSpec_2	potrafi stosować formalizm matematyczny do poprawnego rozumowania, formułowania problemów badawczych oraz prowadzenia dyskusji na ich temat	K_U01 K_U13	3 4
WSpec_3	potrafi rozpoznawać problemy badawcze związane z daną specjanością oraz proponować przykłady ich rozwiązań	K_U14	4
WSpec_4	jest gotów do wykorzystywania wiedzy teoretycznej w wybranych specjalistycznych zastosowaniach matematyki	K_K03	3
WSpec_5	jest gotów do korzystania z różnych źródeł informacji w celu poszerzania swojej wiedzy, przy zachowaniu uczciwości intelektualnej i odpowiedzialności	K_K01 K_K04	4 2

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
e03	Practical methods	Creation/production – creative workshop *an activity involving creating/producing a work/artifact based on the individual, creative effort of the participant; the creative workshop is characterized by the presence and openness which make it possible to access the essence of the work/ peculiarity of the artifact at every stage of its creation/production*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
WPro_fs_1	laboratory classes	45	course work	WSpec_1, WSpec_2, WSpec_3, WSpec_4, WSpec_5	b04, e03, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the*	Yes

		class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.	
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Statistical methods of results processing**
Module code	KN-F-SMOW
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	Podczas zajęć student zapoznaje się z zagadnieniami związanymi z analizą niepewności pomiarowych (pomiary bezpośrednie i pomiary pośrednie, błąd względny i bezwzględny, zgodność pomiarów) oraz metodami ich prezentowania (wykresy, histogramy, zapis wyników). Przedstawione zostaną metody i procedury statystyczne (średnia, odchylenie standardowe, błąd standardowy średniej, rozkład Gaussa, metoda najmniejszych kwadratów, odrzucanie wyników pomiarów), które pozwolą na samodzielną analizę z zakresu pomiaru wielkości fizycznych.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
SMOW_01	zna i rozumie zagadnienia z zakresu statystyki pozwalające analizować pomiary z zakresu fizyki	KN_NDP_F_S1_W04	5
SMOW_02	rozumie znaczenie statystycznej analizy danych pomiarowych w interpretacji wyników badań eksperymentalnych	KN_NDP_F_S1_W04	5
SMOW_03	zna podstawy technik obliczeniowych wspomagających opracowanie wyników pomiarów	KN.2023_W04	5
SMOW_04	potrafi poprawnie prezentować wyniki pomiarów odpowiednio je zapisując i prezentując na wykresach i histogramach	KN_NDP_F_S1_U01	3
SMOW_05	potrafi samodzielnie dobrać właściwe metody statystyczne i zastosować je do podstawowej obróbki danych	KN_NDP_F_S1_U03 KN_NDP_F_S1_U04	2 4
SMOW_06	potrafi zastosować aparat matematyczny do rozwiązywania prostych problemów analizy danych doświadczalnych	KN_NDP_F_S1_U05 KN_NDP_F_S1_U06	5 5
SMOW_07	potrafi analizować wyniki pomiarów i obiektywnie je porównywać z innymi wynikami	KN_NDP_F_S1_U05	5
SMOW_08	jest gotowy do podnoszenia swoich kompetencji bazując na innych dziedzinach naukowych	KN_NDP_F_S1_K01	5

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
b02	Problem-solving methods	Lecture-discussion *transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c02	Demonstration methods	Video show *reproducing a film or video material in its entirety or in fragments in order to illustrate the content taught in class, to submit it to analysis and evaluation or to use it as an exercise in image perception; a film/video can be a work of art, an illustration (also technical illustration) of a content/phenomenon/object, a private record of an action, a media image, etc.*
c06	Demonstration methods	Demonstration-imitation *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in*

		the form of a projected image
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*
e06	Practical methods	Observation *also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
SMOW_fs_01	workshop	15	course work	SMOW_01, SMOW_02, SMOW_03, SMOW_04, SMOW_05, SMOW_06, SMOW_07, SMOW_08	a03, a05, b01, b02, b04, b08, b09, c02, c06, c07, d01, d02, d03, e01, e06, e07, f01, f02

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the*	No

		range of activities indicated in it as required for full participation in classes	
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	No
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Teaching methodology I**
Module code	W4-MT-S1-25-MSzk1
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest gromadzenie doświadczeń związanych z pracą dydaktyczno – metodyczną nauczyciela matematyki na II etapie edukacyjnym (klasy IV - VIII szkoły podstawowej) i konfrontowanie nabytej wiedzy z zakresu matematyki, dydaktyki ogólnej i dydaktyki matematyki z działaniami praktycznymi. Kształtowanie odpowiednich kompetencji dydaktycznych i metodycznych studentów odbywa się poprzez: - opracowanie przez zespół studentów lekcji w formie scenariusza (konspektu) oraz prezentacji multimedialnej - przygotowywanie się studenta do samodzielnego prowadzenia lekcji matematyki; - prezentację przygotowanej przez zespół studentów lekcji – omówienie doboru celów, metod, form pracy, środków dydaktycznych; organizacja oraz tok lekcji; - obserwowanie aktywności studenta oraz wszelkich czynności podejmowanych przez niego w trakcie zajęć; - współdziałanie (z prowadzącym, nauczycielem oraz pozostałymi studentami) w toku planowania oraz ostatecznego przygotowywania lekcji - właściwe reagowanie na uwagi oraz propozycje zastosowania innych rozwiązań.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-PPSTut] Preparation for Work in Primary School

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
MSzk1_01	zna i rozumie podstawę programową z matematyki, cele kształcenia i treści nauczania na II etapie edukacyjnym, przedmiot w kontekście wcześniejszego i dalszego kształcenia oraz strukturę wiedzy przedmiotu	KN.2023_W14 KN.2023_W15	4 4
MSzk1_02	zna i rozumie kompetencje merytoryczne, dydaktyczne i wychowawcze nauczyciela, w tym potrzebę zawodowego rozwoju, także z wykorzystaniem technologii informacyjno-komunikacyjnej oraz dostosowywania sposobu komunikowania się do poziomu rozwoju uczniów i stymulowania aktywności poznawczej uczniów	KN.2023_W12 KN.2023_W14 KN.2023_W15	3 3 3
MSzk1_03	zna i rozumie konwencjonalne i niekonwencjonalne metody nauczania, proces uczenia się przez działanie, odkrywanie lub dociekanie, a także zasady doboru metod nauczania typowych dla matematyki	KN.2023_W15	3
MSzk1_04	zna i rozumie metodykę realizacji poszczególnych treści kształcenia w obrębie matematyki – rozwiązania merytoryczne i	KN.2023_W14	2

	metodyczne, dobre praktyki, dostosowanie oddziaływań do potrzeb i możliwości uczniów lub grup uczniowskich o różnym potencjale i stylu uczenia się, typowe dla przedmiotu błędy uczniowskie, ich rolę i sposoby wykorzystania w procesie dydaktycznym	KN.2023_W15	2
MSzk1_05	potrafi identyfikować typowe zadania szkolne z celami kształcenia, w szczególności z wymaganiami ogólnymi podstawy programowej, oraz z kompetencjami kluczowymi; przeanalizować rozkład materiału; identyfikować powiązania treści przedmiotu z innymi treściami nauczania; dostosować sposób komunikacji do poziomu rozwojowego uczniów	KN.2023_U02	4
MSzk1_06	potrafi dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne; rozpoznać typowe dla błędy uczniowskie i wykorzystać je w procesie dydaktycznym	KN.2023_U07 KN_I_U07	4 4
MSzk1_07	jest gotów do adaptowania metod pracy do potrzeb i różnych stylów uczenia się uczniów; promowania odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych; rozwijania u uczniów ciekawości, aktywności i samodzielności poznawczej oraz logicznego i krytycznego myślenia; kształtowania nawyku systematycznego uczenia się i korzystania z różnych źródeł wiedzy, w tym z Internetu; stymulowania uczniów do uczenia się przez całe życie przez samodzielną pracę	KN.2023_KS04	3

9. Methods of conducting classes

Code	Category	Name (description)
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid*

		own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	workshop	30	course work	MSzk1_01, MSzk1_02, MSzk1_03, MSzk1_04, MSzk1_05, MSzk1_06, MSzk1_07	a05, b04, b08, b09, c07, d01, d02, d03, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Teaching methodology II**
Module code	W4-MT-S2-25-MSzk2
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest gromadzenie doświadczeń związanych z pracą dydaktyczno - metodyczną nauczyciela matematyki na II etapie edukacyjnym (klasy IV - VIII szkoły podstawowej) i konfrontowanie nabytej wiedzy z zakresu matematyki, dydaktyki ogólnej i dydaktyki matematyki z działaniami praktycznymi. Kształtowanie odpowiednich kompetencji dydaktycznych i metodycznych studentów odbywa się poprzez: - opracowanie przez zespół studentów pokazowej lekcji matematyki w formie scenariusza oraz prezentacji (tablica multimedialna); - aktywne współdziałanie studentów z nauczycielem w planowaniu pokazowej lekcji matematyki; - prezentację przez zespół studentów przygotowanej lekcji – omówienie doboru celów, metod, form pracy, środków dydaktycznych; organizacja oraz tok lekcji; - obserwowanie aktywności studenta oraz wszelkich czynności podejmowanych przez niego w trakcie zajęć; - aktywne współdziałanie z prowadzącym oraz pozostałymi studentami w toku planowania, ostatecznego przygotowywania oraz prezentowania lekcji - właściwe reagowanie na uwagi oraz propozycje zastosowania innych rozwiązań.
List of modules that must be completed before starting this module (if necessary)	[W4-MT-S1-25-PNMa1] Education Practicium from Mathematics in Primary School I

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
MSzk2 _01	zna i rozumie podstawę programową z matematyki, cele kształcenia i treści nauczania na II etapie edukacyjnym, przedmiot w kontekście wcześniejszego i dalszego kształcenia oraz strukturę wiedzy przedmiotu	KN.2023_W14 KN.2023_W15	5 5
MSzk2_02	zna i rozumie kompetencje merytoryczne, dydaktyczne i wychowawcze nauczyciela, w tym potrzebę zawodowego rozwoju, także z wykorzystaniem technologii informacyjno komunikacyjnej oraz dostosowywania sposobu komunikowania się do poziomu rozwoju uczniów i stymulowania aktywności poznawczej uczniów	KN.2023_W12 KN.2023_W14 KN.2023_W15	4 4 4
MSzk2_03	zna i rozumie konwencjonalne i niekonwencjonalne metody nauczania, proces uczenia się przez działanie, odkrywanie lub dociekanie, a także zasady doboru metod nauczania typowych dla matematyki	KN.2023_W15	4
MSzk2_04	zna i rozumie metodykę realizacji poszczególnych treści kształcenia w obrębie matematyki – rozwiązania merytoryczne i	KN.2023_W14	3

	metodyczne, dobre praktyki, dostosowanie oddziaływań do potrzeb i możliwości uczniów lub grup uczniowskich o różnym potencjale i stylu uczenia się, typowe dla przedmiotu błędy uczniowskie, ich rolę i sposoby wykorzystania w procesie dydaktycznym	KN.2023_W15	3
MSzk2_05	potrafi identyfikować typowe zadania szkolne z celami kształcenia, w szczególności z wymaganiami ogólnymi podstawy programowej, oraz z kompetencjami kluczowymi; przeanalizować rozkład materiału; identyfikować powiązania treści przedmiotu z innymi treściami nauczania; dostosować sposób komunikacji do poziomu rozwojowego uczniów	KN.2023_U02 KN.2023_U07	5 5
MSzk2_06	potrafi dobierać metody pracy klasy oraz środki dydaktyczne, w tym z zakresu technologii informacyjno-komunikacyjnej, aktywizujące uczniów i uwzględniające ich zróżnicowane potrzeby edukacyjne; rozpoznać typowe dla błędy uczniowskie i wykorzystać je w procesie dydaktycznym	KN.2023_U02 KN.2023_U07 KN_I_U07	5 5 5
MSzk2_07	jest gotów do adaptowania metod pracy do potrzeb i różnych stylów uczenia się uczniów; promowania odpowiedzialnego i krytycznego wykorzystywania mediów cyfrowych; rozwijania u uczniów ciekawości, aktywności i samodzielności poznawczej oraz logicznego i krytycznego myślenia; kształtowania nawyku systematycznego uczenia się i korzystania z różnych źródeł wiedzy, w tym z Internetu; stymulowania uczniów do uczenia się przez całe życie przez samodzielną pracę	KN.2023_KS04	3

9. Methods of conducting classes

Code	Category	Name (description)
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid*

		own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e07	Practical methods	Simulation *an indirect method; imitating reality in order to gain experience approximating a real one; recreating a real-world situation so that its participant can acquire an experience close to the authentic one; work on "replacement" material*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*
f03	Methods of self-learning	Conceptual work *a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
01	workshop	30	course work	MSzk2 _01, MSzk2_02, MSzk2_03, MSzk2_04, MSzk2_05, MSzk2_06, MSzk2_07	a05, b04, b08, b09, c07, d01, d02, d03, e07, f01, f02, f03

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes

a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02	Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Team Project**
Module code	W4-MT-S1-25-PZes
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu jest rozwijanie umiejętności pracy zespołowej, efektywnego zarządzania projektem oraz pogłębienie wiedzy teoretycznej na temat tematu omawianego na zajęciach. Mają umożliwić praktyczne zastosowanie zdobytej wiedzy i umiejętności, a także przygotować do przyszłych wyzwań zawodowych. Studenci zostają podzieleni na zespoły. Każdy zespół pracuje nad zadanym projektem w zakresie matematyki teoretycznej lub stosowanej. Temat projektu określa prowadzący przy aktywnym udziale studentów. Po zorganizowaniu się, zespół opracowuje plan pracy i przedstawia go do zatwierdzenia prowadzącemu. Na zajęciach prezentowane są rezultaty prac nad kolejnymi etapami realizacji projektu. Praca nad projektem kończy się opracowaniem raportu końcowego.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
PZes_1	potrafi zaplanować swoją pracę w ramach realizacji długofalowego projektu	K_U15	5
PZes_2	potrafi i jest gotowy aktywnie uczestniczyć w dyskusji grupowej nad realizowanym projektem, w szczególności potrafi precyzyjnie formułować pytania służące pogłębieniu rozumienia tematu	K_K02 K_U14 K_U16	2 4 3
PZes_3	potrafi i jest gotowy systematycznie pracować nad realizacją kolejnych etapów projektu	K_K02 K_U08 K_U15	5 2 3
PZes_4	potrafi i jest gotowy aktywnie włączyć się w pracę zespołu (lub kierować jego pracą) nad realizacją projektu	K_K04 K_U15	3 5
PZes_5	jest gotowy nawiązać współpracę z pozostałymi członkami grupy pracującej nad projektem i uszanować rezultaty ich pracy	K_K02 K_K05	5 4

PZes_6	potrafi sporządzić raporty z realizacji kolejnych etapów projektu oraz raport końcowy z realizacji projektu	K_U13	5

9. Methods of conducting classes

Code	Category	Name (description)
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
PZes _fs_1	laboratory classes	30	course work	PZes_1, PZes_2, PZes_3, PZes_4, PZes_5, PZes_6	b08, d01, e01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	Yes
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	Yes
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes

b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**The area of “Civil Society and Entrepreneurship: Entrepreneurship”**
Module code	MO-2023-SS-SOP-P
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	The aim of the module is to develop in students a creative attitude towards reality and to familiarize them with the organizational and legal conditions of operating in those sectors of social life in which they can function independently after they graduate. The module prepares students to take up business activity, start a company or an organization whether in the sphere of business, in the third sector (foundations, associations, etc.), or in the broadly understood sector of education, culture and art. Studying the module, students become familiar with the principles of starting, running and financing a business venture, as well as other forms of enterprise or organization, e.g. limited liability companies, joint-stock companies, foundations, associations, etc., they identify basic market mechanisms determining the nature of the conducted activity, in particular the legal, social and ethical framework for conducting it, and gain the ability to independently identify opportunities and threats (risks).
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Is ready to meet social obligations, co-organize activities for the benefit of the community and is open to scientific solutions to cognitive and practical problems.	MOB.2023_K01 MOB.2023_W02_P	3 3
KS_02	Is prepared and motivated to act in an entrepreneurial and creative way and with respect for the norms and rules of coexistence applicable in diverse cultural environments.	MOB.2023_K01 MOB.2023_W02_P	3 3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience pertaining to entrepreneurship, in conjunction with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work connected with entrepreneurship in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
U_03	Can use knowledge in the field of entrepreneurship to design, implement and evaluate their own business or other activities undertaken in cooperation with other entities.	MOB.2023_U01	3
W_01	Has advanced knowledge of selected scientific theories and methods regarding entrepreneurship, including legal and organizational aspects of conducting one's own business or some other activity.	MOB.2023_W01	3

		MOB.2023_W02_P	3
W_02	Knows and understands the characteristic features which define thinking and acting in an entrepreneurial way in the context of the leading discipline of the degree programme.	MOB.2023_W01 MOB.2023_W02_P	3 3

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, KS_02, U_01, U_02, U_03, W_01, W_02	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**The area of “Civil Society and Entrepreneurship: Vade mecum on Law”**
Module code	MO-2023-SS-SOP-VP
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	The aim of the module is to acquire knowledge and skills pertaining to selected legal issues. Having completing the module, the student will possess knowledge of the principles governing key branches of law and the ability to correctly interpret legal texts (acts, administrative decisions, contracts). The topics students will become familiar with include: building an individual career path and protecting intellectual property. As a consequence, the student will gain knowledge about the rights and obligations in particular areas of law and the ability to implement them as a member of civil society.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
KS_01	Is ready to meet social obligations, co-organize activities for the benefit of the community and is open to scientific solutions to cognitive and practical problems.	MOB.2023_K01	3
U_01	Asks questions, analyzes research problems, and finds solutions to them, making use of knowledge, skills and experience pertaining to selected legal issues and their implementation, in conjunction with the leading discipline of the degree programme.	MOB.2023_U01	3
U_02	Communicates the results of his/her work on selected legal issues and their implementation in a way which is clear and understandable not only to specialists.	MOB.2023_U01	3
U_03	Can apply knowledge of selected legal issues to design and pursue his/her own professional career as well as conducting diverse community activities.	MOB.2023_U01	3
W_01	Has fundamental knowledge of rights and obligations relevant to the academic discipline and in conjunction with the leading discipline of the degree programme.	MOB.2023_W01 MOB.2023_W03_VP	3 3
W_02	Understands the connection between legal issues, especially those pertaining to civil rights and obligations and their implementation, and the leading discipline of the degree programme.	MOB.2023_W01 MOB.2023_W03_VP	3 3
W_03	Knows and understands key legal issues defining the way of thinking and proceeding while fulfilling civil rights and		

	obligations.	MOB.2023_W01 MOB.2023_W03_VP	3 3
W_04	Has a well-organized knowledge of legal principles and norms, including those pertaining to the protection of industrial property and copyright, in the context of the studied issues.	MOB.2023_W01 MOB.2023_W03_VP	3 3

9. Methods of conducting classes

Code	Category	Name (description)
a03	Lecture methods / expository methods	Description *a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison*
a05	Lecture methods / expository methods	Explanation/clarification *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
b04	Problem-solving methods	Activating method – discussion / debate *an exchange of views supported by substantive arguments leading to a clash of different views, a compromise or the identification of common positions; it proceeds according to previously agreed-upon rules regarding the time, manner and turn-taking as well as the principles of civil discourse; a discussion is not a competition but aims at finding the best solutions or presenting different points of view; its varieties include brainstorming, Oxford-style debate, panel discussion, decision tree, conference discussion; a debate is an orderly dispute between supporters and opponents of a viewpoint, usually specialists in the field or pre-selected representatives of a group dealing with a common problem*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
f01	Methods of self-learning	Self-education *a method which involves independent acquisition of knowledge, skills and social competences, extending their scope and quality; complementary to the learning process taking place in class; taking on the task of developing and adjusting qualifications on one's own; self-study*
f02	Methods of self-learning	Individual work with a text *searching for and acquiring new information using textbooks and other written sources (including their digital versions); searching for texts, selecting fragments for analysis/interpretation, using other texts to solve a problem related to the studied issue*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	depending on the choice	30	course work	KS_01, U_01, U_02, U_03, W_01, W_02, W_03, W_04	a03, a05, b04, c07, d03, f01, f02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
e01	Activities complementary to the classes	Undertaking, on one’s own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University *a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.

1.	**Field of study**	**Mathematics**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Topology A**
Module code	W4-MT-S1-25-TopA
Number of the ECTS credits	5
Language of instruction	Polish
Purpose and description of the content of education	Moduł Topologia A ma na celu wykształcenie umiejętności posługiwania się klasycznymi metodami topologii ogólnej, pokazanie pewnych pojęć z topologii jako naturalne uogólnienia pojęć analizy, np. zbieżność, ciągłość, zwartość. Przewiduje się realizację następujących treści programowych: 1. Metody wprowadzania topologii. 2. Własności topologii dziedziczonej na podprzestrzenie. 3. Własności przestrzeni ilorazowch. 4. Aksjomaty oddzielania. 5. Twierdzenie Tietze'go-Urysohna. 6. Parazwartość przestrzeni metryzowalnych.. 7. Twierdzenie metryzacyjne Binga-Nagaty-Smirnowa. 8. Iloczyn kartezjański przestrzeni topologicznych. 9. Zwartość przestrzeni topologicznych i Twierdzenie Tichonowa o zwartości. 10. Uniwersalność kostek Tichonowa dla klas przestrzeni całkowicie regularnych ustalonego ciężaru. 11. Charakteryzacja zbioru Cantora. 12. Elementy teorii funkcji kardynalnych na przestrzeniach topologicznych. 13. Twierdzenie Cantora o przestrzeni zupełnej, twierdzenie Baire’a o kategorii.
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
ETopA_01	zna najważniejsze pojęcia z topologii	K_W04 K_W05	3 4
ETopA_02	potrafi sprawdzać, czy dana rodzina podzbiorów jest topologią i zna metody wprowadzania topologii	K_U02	3

		K_U06	4
ETopA_03	potrafi wyznaczać wnętrze i domknięcie zbioru w zadanej topologii	K_U01 K_U02 K_U06	2 2 4
ETopA_04	zna przykłady topologii wyznaczonej przez metrykę na prostej i płaszczyźnie rzeczywistej i potrafi określać własności zbiorów w tych przestrzeniach topologicznych	K_U01 K_U06 K_W04 K_W05	1 5 1 4
ETopA_05	zna i rozumie pojęcie bazy przestrzeni topologicznej, punktu skupienia zbioru oraz granicy ciągu w przestrzeni topologicznej	K_W04 K_W05	4 4
ETopA_06	umie badać istnienie granicy ciągu oraz sprawdzać ciągłość funkcji w poznanych przestrzeniach topologicznych oraz umie wykazać, że pojęcie zbieżności i ciągłości w topologii ogólnej jest naturalnym uogólnienia tych pojęć analizy.	K_U01 K_U02 K_U06	2 2 5
ETopA_07	zna pojęcie i przykłady funkcji ciągłej	K_W04 K_W05	4 3
ETopA_08	zna aksjomaty oddzielania i potrafi wskazać przykłady topologii spełniających, bądź nie spełniających poszczególne z nich	K_U01 K_U02 K_U06 K_W05	2 1 3 3
ETopA_09	zna pojęcia przestrzeni zwartej i przestrzeni zupełnej; zna charakteryzację przestrzeni zwartej w przestrzeniach metrycznych oraz związek pomiędzy zwartością a zupełnością przestrzeni metrycznej	K_W04 K_W05	4 3
ETopA_10	potrafi opisać postać zbiorów otwartych w podprzestrzeni przestrzeni topologicznej oraz zbiorów bazowych na produkcie przestrzeni topologicznych	K_U02 K_U06	3 3
ETopA_11	umie wskazać przykłady zastosowania metod topologii w innych działach matematyki, np. algebry, analizy, analizy zespolonej	K_U01 K_U02 K_U06	1 3 5

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b08	Problem-solving methods	Activating method – peer learning *learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another*

b09	Problem-solving methods	Activating method – flipped classroom *anticipatory learning; work in class is based on previously studied material indicated by the person teaching the course; preparation outside the classroom serves the purpose of getting familiar with the issues whose knowledge is necessary for participating in the in-class discussion and the training in the related practical skills; the activity is based on the work of students under the guidance of the person teaching the course*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*
d04	Programmed learning methods	Reconstruction / reproduction *proceeding according to the indicated/displayed pattern/model; e.g., the reconstruction of a structure, model, image, etc.*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
ETopA_fs_1	lecture	30	exam	ETopA_01, ETopA_02, ETopA_04, ETopA_05, ETopA_07, ETopA_08, ETopA_09	a01
ETopA_fs_2	discussion classes	30	course work	ETopA_01, ETopA_02, ETopA_03, ETopA_04, ETopA_05, ETopA_06, ETopA_07, ETopA_08, ETopA_09, ETopA_10, ETopA_11	b08, b09, d02, d04

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class	No

		exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class	
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/ examination completion *a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course*	No

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