1.	**Field of study**	**not applicable**
2.	Faculty	not applicable
3.	Academic year of entry	not applicable
4.	Level of qualifications/degree	not applicable
5.	Degree profile	not applicable
6.	Mode of study	not applicable

7.	**General information about the module**
Module name	**Physics Lab I for Secondary Schools part 2**
Module code	KN-F-S2-PrF-SzSr-CZ2
Number of the ECTS credits	1
Language of instruction	Polish
Purpose and description of the content of education	The aim of the module is for future physics teachers to complete selected sets of exercises that complement the content of the following modules: Electricity and Magnetism II. By performing exercises individually or in a team of 2, the student becomes familiar with the principles of operation and operation of measurement systems and research equipment, which they use to confirm theoretical knowledge acquired during lectures. They can plan an experiment, formulate and verify hypotheses, conduct an experiment and interpret the obtained results. They use statistical methods of measurement error analysis to develop experimental data, as well as source materials and tabulated physical constants. The topics of laboratory exercises in the field of electricity and magnetism will be provided by the instructor. The selected exercises will be related to the content of the basic and extended scope of the general education core curriculum for secondary schools.
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)
PF2_01	The student has extended knowledge of individual branches of physics, including the module: electricity and magnetism. He or she is also able to use scientific terminology and apply the necessary methodology to describe physical and natural phenomena.	KN.2023_U15 KN_NDP_F_S2_W01 KN_NDP_F_S2_W02 KN_NDP_F_S2_W06	2 2 2 3
PF2_02	The student is able to explain, on the basis of the laws of physics and physical theories, phenomena observed during laboratory exercises, which will be selected from the basic and advanced content of the general education core curriculum for secondary schools for the subject of physics.	KN_NDP_F_S2_U01	4
PF2_03	The student is able to use simple measuring devices fluently. The student is able to perform measurements of physical quantities using the instructions of the measuring station. In addition, the student knows the operating principle of the mechanical, electronic and optical devices used.	KN_NDP_F_S2_U04 KN_NDP_F_S2_W03	3 3
PF2_04	The student is able to build simple electrical and electronic systems.	KN_NDP_F_S2_U06	4
PF2_05	The student is able to process measurement results and analyze measurement uncertainty using statistical methods.	KN_NDP_F_S2_U02	4

		KN_NDP_F_S2_U05	4
PF2_06	The student is able to obtain information from the literature data (including English), interpret the obtained results, formulate a discussion, and conclude.	KN.2023_U18 KN_NDP_F_S2_U03 KN_NDP_F_S2_U04	4 3 3
PF2_07	The student knows the fundamental principles of occupational health and safety.	KN_NDP_F_S2_W06	3
PF2_08	The student understands the need to perform measurements reliably and document them.	KN_NDP_F_S2_K01	4
PF2_09	The student is able to work individually and cooperate in a group, the student is able to estimate the time needed to complete the assigned task	KN.2023_KS07 KN_NDP_F_S2_U04	4 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*
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*
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	laboratory classes	15	course work	PF2_01, PF2_02, PF2_03, PF2_04, PF2_05, PF2_06, PF2_07, PF2_08, PF2_09	a05, b04, d02, d03, e01, e02, 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)*	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*	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.