1.	**Field of study**	**Biology**
2.	Faculty	Faculty of Natural Sciences
3.	Academic year of entry	2021/2022 (winter term), 2022/2023 (winter term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

Module: Equipment workshops

Module code: 2BL_113a

1. Number of the ECTS credits: 2

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
2BL_113_1	Learns advanced microscopic methods by operating the confocal microscope and Nomarski contrast microscoe.	2BL_K04_P 2BL_U01_P 2BL_U03_P 2BL_W04_P	3 4 5 5
2BL_113_2	Learns the methods of measuring electrical potential in plant cells by performing patch-clamp measurements and classical electrophysiology.	2BL_K04_P 2BL_U01_P 2BL_U03_P 2BL_W04_P	3 4 5 5
2BL_113_3	Learns the techniques of measuring plant growth using transducers and measuring growth of the plant organs' surface.	2BL_K04_P 2BL_U01_P 2BL_U03_P 2BL_W04_P	3 4 5 5
2BL_113_4	Learns the methods of determining the content of selected compounds in plant cells with use of UV-VIS spectrophotometer.	2BL_K04_P 2BL_U01_P 2BL_U03_P 2BL_W04_P	3 4 5 5
2BL_113_5	Raises professional competences.	2BL_K04_P 2BL_U01_P	4 4

		2BL_W04_P 2BL_W07_P	4 4
2BL_113_6	Empirically collects data.	2BL_K04_P 2BL_U01_P 2BL_W07_P	4 5 3
2BL_113_7	Interprets and conducts a pre-treatment of the results.	2BL_U02_P 2BL_W07_P	4 4
2BL_113_8	Presents the collected results.	2BL_K04_P 2BL_U02_P 2BL_W03_P 2BL_W07_P	3 4 4 4

3. Module description

Description	The main goal of the module is to familiarize students with the basic and advanced equipment used in biological research, both basic and application. Students will get aquainted with the equipment by carrying out measurements. The aim of the module is also improving the professional skills of students. Students acquire the ability to use various research techniques depending on the research problem. They also learn to analyze and interpret the obtained results.
Prerequisites	Basic knowledge in physics, chemistry and biology. Ability to prepare solutions and preparation of biological material. Basic computer skills and basic knowledge of statistics. Ability to operate basic laboratory equipment

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
2BL_113_w_1	credit	according to the rules set out in the syllabus	2BL_113_1, 2BL_113_2, 2BL_113_3, 2BL_113_4, 2BL_113_5, 2BL_113_6, 2BL_113_7, 2BL_113_8

5. Forms of teaching

code	form of teaching			required hours of student's own work		assessment of the learning outcomes of the module
	type	description (including teaching methods)	number of hours	description	number of hours	
2BL_113_fs_1	laboratory classes	Work in the laboratory under the supervision of the lecturer, performing experiments based on instructions, analysis of the results obtained.	30	Preparation for exercises based on literature. Preparation of the material required to prepare the report.	20	2BL_113_w_1