1.	**Field of study**	**Biology**
2.	Faculty	Faculty of Natural Sciences
3.	Academic year of entry	2020/2021 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

Module: Microscopic techniques in animal research

Module code: 1BL_67a

1. Number of the ECTS credits: 3

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
1BL_67_1	Defines and uses the terms concerning microscopic techniques.	1BL_W02_P 1BL_W06_P	5 5
1BL_67_2	Identifies the basic micoscopic techniques and techniques of animal tissue analysis.	1BL_U01_P 1BL_W06_P	4 4
1BL_67_3	Characterizes different methods of tissue analysis using light, fluorescence and transmission electron microscopy.	1BL_U01_P 1BL_W06_P	3 3
1BL_67_4	Uses the basic microscopic techniques and techniques of animal tissue analysis under supervision of academic staff.	1BL_U01_P 1BL_U03_P 1BL_W06_P	3 3 3
1BL_67_5	Carries out microscopic analysis of the specimens.	1BL_U01_P 1BL_U04_P 1BL_U06_P	4 4 4
1BL_67_6	Formulates opinions and conclusions resulting from work in the histological and microscopy laboratories.	1BL_K01_P 1BL_U02_P 1BL_U06_P	4 4 4
1BL_67_7	Discusses the possibility of using the microscopic and histological techniques in biotechnology and related fields.	1BL_K01_P	4

3. Module description	
Description	The course provides specialist knowledge about the classification of methods of animal tissue analysis (bright field and fluorescence microscopy, transmission and scanning electron microscopy) and classifies the methods of animal tissue analysis. It introduces the basic terms and definitions related to histological analysis, as well as the construction and basic principles of operation of the equipment used in the histological laboratory and laboratories of microscopic techniques. The course familiarizes the student with the differences in the preparation of various animal tissues for histological analysis, and also teaches identification of the examined structures in the analyzed biological material using an appropriate microscope (light, fluorescence microscopy, transmission electron microscopy). The student will become acquainted with the work of the fluorescence microscope as well as a transmission and scanning electron microscope. The student's own work is the current preparation for the practical part of the laboratory. Preparation for discussion and to pass the course.
Prerequisites	Knowledge of zoology, cell biology and histology.

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
1BL_67_w_1	zaliczenie na ocenę	according to the rules set out in the syllabus	1BL_67_1, 1BL_67_2, 1BL_67_3, 1BL_67_4, 1BL_67_5, 1BL_67_6, 1BL_67_7

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	
1BL-67_fs_1	laboratory classes	Work under supervision of teacher – carrying out histological stainings/reactions to analyse animal tissues following carefully a sequence of instruction provided by teacher; microscopical observation of specimens produced during classes (notes, drawings), discussion. Laboratory with the use of bright field, fluorescence microscopy, and transmission and scanning electron microscopy.	45	Preparation for classes based on literature. Preparation for the colloqium.	35	1BL_67_w_1