

Subject card

Subject name and code	Microscopic techniques - laboratory classes, PG_00192683						
Field of study	Marine Biotechnology						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
Education level	Master's studies	Subject group			Obligatory subject group in the field of study		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	2	ECTS credits			1.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	UG Institute of Biotechnology -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Magdalena Weidner-Glunde				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	0.0	15
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	15		1.0		9.0	25
Subject objectives	The specific objective of the course is to familiarise students with the physical basis of microscope operation, the limitations of microscope applicability and the research capabilities of different types of microscopes.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[MBMU2-KU01] Can plan and conduct research in the laboratory and at sea, and to document procedures and results. Independently or under the supervision of an authorized staff member, carries out work using specialized equipment. Complies with occupational health and safety regulations.		The student knows the theoretical basis of the operation of different types of microscopes (light, fluorescence, elektron) and their applications in biological research			[SU2] presentation/project/paper/report	
	[MBMU2-KU02] Can collect and interpret empirical data; applies statistical methods and computer tools in data analysis; formulates conclusions based on empirical data		The student knows the basis methods of quantitative and qualitative analysis of microscopic data and understands the importance of documentation of observation			[SU2] presentation/project/paper/report	

Subject contents	<p>Auditory classes</p> <ol style="list-style-type: none"> 1. Preparation, fixation and staining of specimens 2. Introduction to light microscopy 3. Contrast techniques in light microscopy 4. Fluorescence microscopy - operation and applications 5. Construction and operation of confocal microscopes 6. Stereoscopic microscopy 7. From whole organisms to single particles innovative imaging methods in confocal microscopy <p>Laboratory classes</p> <ol style="list-style-type: none"> 1. Setting up Kohler illumination 2. Operation of a light microscope with a camera 3. Interpretation of the microscopic image. Taking measurements. 4. Sample preparation, fixation and staining 5. Fluorescence microscope image acquisition 6. Fluorescence microscopy data processing 7. Imaging with simple and stereoscopic light microscopes 8. Live imaging 9. Imaging in three-dimensional demonstration 		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
Recommended reading	Basic literature	Materials provided in class by the teacher	
	Supplementary literature	Materialy provided in class by the instructor.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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