

Fungi in Biology and Biotechnology								Code of the course	Year / Semester
Type of subject:		Education Profile		The level of education		Form of studies			
Obligatory		General Academic				Stationary			
Type of subject							ECTS		
Lecture	Exercises	Laboratory	Project	Seminar	Practical classes	Exam			
15	-	45	-	-	-	-	7		
Subject coordinator:									
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II. COURSE CONTENT		
Course type – Lecture		Number of hours
1-2	Biology of fungi	2
3-4	Characteristics of typical representatives of the fungal world.	2
5-6	Biotechnology of fungi	2
7-8	Fungi in bioremediation - introduction	2
9-11	Fungi in biodegradation - lignolytic and non-lignolytic fungi in pollutant decomposition and environmental technologies (decomposition of pesticides, PAHs, agricultural pollutants, etc.).	3
12	Bioaugmentation, bioadsorption of metals by fungi	1
13-14	Potential of mycorrhizal fungi in bioremediation of soils	2
15	Test on lecture content	1

		TOTAL:	15
Course type - Laboratory		Number of hours	
1	Introduction to laboratory classes - safety and hygiene of working with biological material in the laboratory, preparation of growth medium and sterilization of essential equipment		3
2	Quantitative analysis of filamentous fungi on agar media		6
3-4	Qualitative analysis of filamentous fungi by microscopic and macroscopic techniques		6
5	Isolation of selected fungal species to create pure cultures		3
6-8	Propagation of pure cultures of filamentous fungi on various selected organic and inorganic media		6
9	Formation of biopreparations from pure cultures of fungi and/or their mixtures		3
10-14	Biotechnological application of isolated fungi - student's own project: - development of biopreparation - application of the biopreparation - monitoring of the experiment - final conclusions from the obtained result		15
15	Defense of reports made during laboratories		3
		TOTAL:	

DIDACTIC METHODS

1.	Lecture using audiovisual means and/or the PCz e-learning platform
2.	Multimedia presentation
3.	Original teaching materials

METHODS OF ASSESSMENTS: (F – FORMATIVE; S – SUMMATIVE)

F01	Activity in classes
F02	Evaluation of work during laboratory exercises
S01	Test
S02	Evaluation of the laboratory reports

III. STUDENT WORKLOAD

L.p.	Form of activity	Numer of hours for activity
		[hours]
1. Direct teaching hours:		
1.1	Hours of classes organized by universities – lectures	15
1.2	Hours of classes organized by universities – exercises	
1.3	Hours of classes organized by universities – laboratory	45
1.4	Hours of classes organized by universities – project	
1.5	Hours of classes organized by universities – field activities	
1.6	Hours of classes organized by universities – seminar	
1.7	Exam	
Total direct hours:		60
2. Student's own work		
2.1	Preparation for exercises and for final exams	
2.2	Preparation for laboratory test reports, preparation of individual	79
2.3	Preparing your own project	
2.4	Preparation for the final exam from the lecture	
2.5	Exam Preparation	
2.6	Reading the literature	
Total student's self-studies:		79
Overall student workload:		175
TOTAL NUMBER OF ECTS FOR THE COURSE:		7
The number of ECTS credits that a student obtains in classes requiring the direct participation of the teacher:		2,4
The number of ECTS credits that the student obtains as part of his/her own work		4,6

IV. PRIMARY AND SUPPLEMENTARY LITERATURE

Primary literature

1	Pepper, Ian L., et al., eds. Environmental microbiology. Academic press, 2011.
2	Gadd, Geoffrey M., ed. Fungi in bioremediation. No. 23. Cambridge University Press, 2001.

3	Kaushik, Anubha, and C. P. Kaushik. Basics of environment and ecology. New Age International, 2010.
4	Paul, Eldor, ed. Soil microbiology, ecology and biochemistry. Academic press, 2014.
Supplementary literature	

VII. OTHER USEFUL INFORMATION ABOUT THE SUBJECT	
1.	Opportunity to review supporting materials and literature: <i>Appropriate to the type of material - in teaching classes, in the TUC Central Library.</i>
2.	Information on when and where the classes will be held <i>Notice board at the Faculty of Infrastructure and Environment and on the website of the Faculty of Infrastructure and Environment, MSz USOS system.</i>
3.	Information about the consultation (times + place): <i>the staff consultation schedule is available on the Faculty of Infrastructure and Environment website and on the staff room door.</i>