Course title:				
Fungi in Biology and Biotechnology				
Biologia i biotechnologia grzybów				
Field of study:				
Type of study:	The level of education:	Education profile:		
full-time studies	first-cycle studies	general academic		
Type of subject:	Semester:	Course language:		
Wybierz element.	IV	English		
Course type:	Number of hours:	ECTS Credit points:		
lecture, laboratory	15L, 45Lab	7		

SYLLABUS

COURSE CONTENT

Form of classes - lectures		
Biology of fungi		
Characteristics of typical representatives of the fungal world.		
Biotechnology of fungi		
Fungi in bioremediation - introduction	2	
Fungi in biodegradation - lignolytic and non-lignolytic fungi in pollutant		
decomposition and environmental technologies (decomposition of pesticides,		
PAHs, agricultural pollutants, etc.).		
Bioaugmentation, bioadsorption of metals by fungi		
Potential of mycorrhizal fungi in bioremediation of soils		
Test on lecture content	1	
Form of classes - laboratory		
Introduction to laboratory classes - safety and hygiene of working with		
biological material in the laboratory, preparation of growth medium and	3	
sterilization of essential equipment		
Quantitative analysis of filamentous fungi on agar media	6	
Qualitative analysis of filamentous fungi by microscopic and macroscopic		
techniques		
Isolation of selected fungal species to create pure cultures		
Propagation of pure cultures of filamentous fungi on various selected organic and inorganic media		
Formation of biopreparations from pure cultures of fungi and/or their mixtures	3	
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		
Defense of reports made during laboratories	3	

COURSE STUDY METHODS

E-learning platform of the Czestochowa University of Technology
 multimedia presentation
 laboratory setup
 the literature and instructions for laboratory classes

METHODS OF ASSESMENT (F - formative; S - summative)

F1. - activity in classes	
F2. - evaluation of work during laboratory exercises	
S1. – test	
S2. - evaluation of the laboratory reports	

STUDENT WORKLOAD

Form of activity	Workload (hours)
Participation in lectures	15 h
Participation in classes	- h
Laboratory	45 h
Participation in project classes	- h
Participation in seminar	-
Preparation course on e-learning	-
Test	4 h
Entrance test for laboratory classes	2 h
Project's defence	-
Exam	-
Consultation hours	30 h
DIRECT TEACHING, hours/ ECTS	96 h / 3,84 ECTS
Preparation for tutorials	-
Preparation for laboratories	64 h
Preparation for projects	-
Preparation for seminars	-
Preparation for e-learning classes	-
Participation in e-learning classes	-
Working on project	-
Preparation for tests	15 h
Preparation for exam	-
SELF-STUDY, hours/ ECTS	79 h / 3,16 ECTS
TOTAL (hours)	175 ∑
TOTAL ECTS	7 ECTS

PRIMARY AND SUPPLEMENTARY TEXTBOOKS

Pepper, Ian L., et al., eds. Environmental microbiology. Academic press, 2011.

Gadd, Geoffrey M., ed. Fungi in bioremediation. No. 23. Cambridge University Press, 2001.

Kaushik, Anubha, and C. P. Kaushik. Basics of environment and ecology. New Age International, 2010.

Paul, Eldor, ed. Soil microbiology, ecology and biochemistry. Academic press, 2014.

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