

Environmental monitoring and protection								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			
30	30	-	-	-	-	-	7		
Subject coordinator:									
<i>Dr Inż. Agnieszka Popenda, agnieszka.popenda@pcz.pl</i>									

II. COURSE CONTENT		
Course type – Lecture		Number of hours
1	Programme, structure and fundamentals of the State Environmental Monitoring Programme	4
2-4	Definition, objectives, tasks of monitoring in environmental subsystems	6
5	Current legislations with respect to environmental monitoring	2
6	The directions of studies in the environmental biomonitoring	2
7	Discussion and presentation of students	1
8-9	Origin and types of pollutants in selected environmental elements	4
10	Biological processes applied in the treatment of wastewater	2
11	The removal of organic and biogenic pollutants from wastewater	2
12	Protection of polluted sediments	2

13	Protection of polluted soils	2
14	Protection of polluted air	2
15	Discussion and presentation of students	1
TOTAL:		30
Course type - Laboratory		Number of hours
1	Computer laboratory safety training	1
2	Introduction to the rules of existing selected data bases and networks	2
3-4	Analysis of monitoring data coming from the selected monitoring station	7
5	Interpretation of results of the pollution state	3
6	Preparation of laboratory work report	2
7-11	Examples of environmental protection technologies	8
12	Group discussion on a selected topic	2
13-14	Presentation on a selected topic	4
15	Course summary	1
TOTAL:		30

DIDACTIC METHODS	
1.	Blackboard
2.	Multimedia presentation
3.	Monitoring data coming from the selected monitoring network station

METHODS OF ASSESSMENTS: (F – FORMATIVE; S – SUMMATIVE)	
F01	activity in classes
F02	evaluation of laboratory work and preparation of laboratory report
S01	Presentation

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	30
1.2	Hours of classes organized by universities – exercises	30
1.3	Hours of classes organized by universities – laboratory	
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	35
2.2	Preparation for laboratory test reports, preparation of individual	60
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:		95
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:		3,2
The number of ECTS credits that the student obtains as part of his/her own work		3,8

IV. PRIMARY AND SUPPLEMENTARY LITERATURE	
Primary literature	
1	Current the State Environmental Monitoring Programme
2	Jones A., Duck R., Reed R., Weyers J.: Environmental sciences, PWN, Warsaw 2002
3	Current legislations with respect to environmental monitoring with respect to the water, soil,air.
4	Sibi, G., Environmental Biotechnology Fundamentals to Modern Techniques, CRC Press, 2023
5	Environmental Protection, GUS, Warsaw (current)

Supplementary literature

VII. OTHER USEFUL INFORMATION ABOUT THE SUBJECT
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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>