University of Gdańsk

Subject card

Subject name and code	Water and wastewater treatment technologies - lectures, PG_00075892		
Field of study	Aquaculture – Business And Technology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	undergraduate studies	Subject group	
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	practical	Assessment form	
Conducting unit	Pracownia Analityki i Nanodiagnostyki Biochemicznej -> Katedra Technologii Środowiska -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Adam Lesner	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

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	30	20.0	0.0	50

Subject objectives

The purpose of the course is to familiarize students with the content of the lecture topics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[AKWAL3_W06] knows and discusses techniques, research methods and tools used in aquaculture	The student describes, using the correct terminology, the unit processes and the mechanisms occurring during their course.	[SW4] test/exam - oral or written
[AKWAL3_W02] knows and understands chemical, biological, physical processes and phenomena, identifies them, analyses their mechanisms in relation to the aquatic environment, and is aware of the connections between various natural disciplines	The student can, using physical, chemical or biochemical terms and phenomena, explain the course of natural phenomena occurring in the environment. He can synthetically analyze their course and effects.	[SW4] test/exam - oral or written
[AKWAL3-U06] can apply basic techniques and technological processes related to the use of elements of the environment for practical purposes	The student correctly connects theories to practice, combining unit processes into an efficient technological process,	[SU4] test/exam - oral or written
[AKWAL3-U02] can make observations and perform simple physical / biological / chemical measurements that are typical in socio-economic activity based on natural sciences	The student is able to operate physical and chemical apparatus, identifies basic chemical reagents, naming them correctly. He has the ability to critically interpret the results obtained.	[SU1] oral statement/conversation/ discussion [SU8] observation of student's independent or team work
[AKWAL3-K02] is ready to take responsibility for the work of the team and its safety; knows how to make decisions and how to act in different situations	The student has the skills to perform basic laboratory experiments with laboratory safety and proper cooperation in a laboratory group.	[SK5] implementation of a problem task [SK8] observation of student's independent or team work

Subject contents	LECTURE:A.1. Basic concepts of water theory in the natural environmentA.2. Physicochemical characteristics of surface and groundwater and their temporal changes (State Environmental Monitoring).A. 3. Assessment of changes in surface and groundwater quality under the influence of natural and anthropogenic environmental transformationsA.4. Basic processes in water purificationA.5. Removal of specific pollutants from water (POPs, heavy metals)A.6 Environmental law in the aspect of waterLABORATORY EXERCISES:B.1. Physicochemical analyses of waterB.2. Examples of technological processes used in wastewater and water treatmentB.3. Analysis of the course of the water treatment process based on technologies used in selected treatment stations in the Pomeranian provinceFIELD EXERCISES:C.1. Seasonal changes in the quality and quantity of river outflow to the sea
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written exam or PP presentationon	51.0%	80.0%
lab test	51.0%	20.0%

Recommended reading

Basic literature	Kowal A.L., Świderska Bróż M., 2000, Oczyszczanie wody, Wyd. Naukowe PWN, Warszawa Wrocław Surgiel P., Kurbiel J., Ćwiczenia laboratoryjne z oczyszczania wody, Politechnika Świętokrzyska, Kielce, 2001 Malina G., Szczepański A., Likwidacja zanieczyszczeń substancjami ropopochodnymi w środowisku wodno-gruntowym, Biblioteka Monitoringu Środowiska, Warszawa, 1994 Dojlido J.R., Chemia wód powierzchniowych, wyd. Ekonomia i Środowisko, Białystok, 1995 Wytyczne dotyczące jakości wody do picia. Wydanie czwarte. Izba Gospodarcza Wodociągi Polskie, Bydgoszcz 2014 (tłumaczenie języka angielskiego Wytycznych WHO z roku 2011)
Supplementary literature	Bajkiewicz Grabowska E., Mikulski Z., 2008. Hydrologia ogólna. PWN Warszawa. Niemirycz E., 2008, Halogenated organic compouds in the environment in relation to climate change, Environmental Monitoring Library, MŚ, Warszawa Żurek J., Bagiński Z., red., Prawo ochrony środowiska Wspólnoty Europejskiej, tom 7: Woda. MOŚZNiL, Warszawa, 1996
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. unit processes leading to the formation of excess sludge2. Iron removal techniques3. disinfection of water
Work placement	Not applicable

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