University of Gdańsk

Subject card

Subject name and code	Pharmaceuticals in the water environment - origin, transformation, threats, PG_00149054		
Field of study	Medical Biology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
Education level	undergraduate studies	Subject group	Obligatory subject group in the field of study Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	1.0
Learning profile	academic	Assessment form	
Conducting unit	Katedra Biologii Eksperymentalnej i Biotechnologii Roślin -> Faculty of Biology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Anna Aksmann	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	15.0	0.0	0.0	0.0	15

E-learning hours included: 0.0

Additional information:
- Text analysis with discussion
- Lecture with multimedia presentation
- Multimedia presentations prepared by students
- Part of classes in the form of e-learning

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	0.0	10.0	25

Subject objectives

Presenting to the student selected aspects of environmental pollution with pharmaceuticals.

Indication of the sources of these pollutants and discussion of possible transformations that pharmaceuticals may undergo in the cells of living organisms and in the environment.

Drawing attention to the threats associated with the presence of pharmaceuticals in the environment and the possibilities of preventing their effects.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMEDL3_U06] reads with understanding scientific texts in Polish and simple texts in English in the field of medical biology; independently searches and uses available sources of information, including electronic sources	The graduate reads and understands scientific texts in Polish and simple texts in English regarding the threats resulting from the presence of pharmaceuticals in the aquatic environment; independently searches for and uses available information sources, including electronic sources.	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work
[BIOLMEDL3_K01] understands the need for lifelong learning and to update his/her knowledge of medical biology and related disciplines	The graduate understands the need for lifelong learning and updating knowledge in the field of studied issues and related disciplines.	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[BIOLMEDL3_W12] is oriented in the development and current state of knowledge and the latest trends in medical biology; indicates their relationship with other disciplines of natural or medical sciences	The graduate is aware of the development and current state of knowledge as well as the latest trends in the field of threats resulting from the presence of pharmaceuticals in the aquatic environment; indicates their relationship with other disciplines of natural or medical sciences.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work
[BIOLMEDL3_U09] has the ability to give oral presentations in Polish or English on specific issues in medical biology	The graduate has the ability to give oral presentations in Polish on issues related to the threats resulting from the presence of pharmaceuticals in the aquatic environment.	[SU1] oral statement/conversation/ discussion
[BIOLMEDL3_U07] is able to identify problems corresponding to the needs of an individual and a social group and to undertake basic diagnostic, preventive and educational activities appropriate to the profession of medical biologist	The graduate is able to identify problems related to the contamination of the aquatic environment with pharmaceuticals and undertake basic educational activities appropriate for the profession of a medical biologist.	[SU1] oral statement/conversation/ discussion

Subject contents

Sources of contamination of the aquatic environment with pharmaceuticals. Pharmaceuticals found in the largest quantities in the environment. Transformations of pharmaceuticals in the cells of living organisms and in the environment - selected issues. Effects of environmental pollution with pharmaceuticals. Ways to prevent environmental contamination with pharmaceuticals.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
multimedia presentation prepared by a student	51.0%	50.0%
essay	51.0%	50.0%

Recommended reading

Basic literature	Brooks, B. W., & Huggett, D. B. (Eds.). (2012). Human pharmaceuticals in the environment: current and future perspectives (Vol. 4). Springer Science & Business Media. Harshkova D., Aksmann A. Zanieczyszczenie środowiska niesteroidowymi lekami przeciwzapalnym na przykładzie diklofenaku przyczyny, skutki, bioidnykacja. Kosmos (2019) 322, 185÷194 Hejna, M., Kapuścińska, D., & Aksmann, A. (2022). Pharmaceuticals in the aquatic environment: A review on eco-toxicology and the remediation potential of algae. International Journal of Environmental Research and Public Health, 19(13), 7717. Selected articles from scientific journals.
Supplementary literature	Karthikeyan, O. P., Mehariya, S., & Bhatia, S. K. (Eds.). (2022). Algal Biorefineries and the Circular Bioeconomy: Industrial Applications and Future Prospects. CRC Press. Selected articles from scientific journals.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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