



Subject card

Subject name and code	Poisons and basics of toxicology, PG_00069269						
Field of study	Chemistry						
Date of commencement of studies	February 2026	Academic year of realisation of subject			2026/2027		
Education level	second-cycle 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			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Organic Chemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Sławomir Makowiec					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	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	45	5.0		25.0		75
Subject objectives	The aim of the course is to familiarize students with the basic issues of toxicology, to learn the mechanisms of poisons entering the body, the mechanisms of poisoning, and ways to prevent poisoning.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_K01] is aware of the problems related to the profession of a chemist, is able to assess the effects of the activity performed	recognizes dangerous substances, knows what their effects are and how to prevent poisoning with them.			[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W01] recognizes problems of modern chemistry, including properties and obtaining chemical compounds, necessary for making calculations, including the dependence of the compound's structure and its reactivity	knows how selected toxic substances work and is able to neutralize their presence in the environment.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_U01] integrates and interprets information from literature, databases and other sources	is able to find information about toxic substances in various sources of knowledge.			[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information		
Subject contents	Course content – lecture Lecture 1. Basic Concepts and Definitions in Toxicology 2. Toxokinetics How Substances Behave in the Body 3. Toxodynamics How Substances Damage Cells 4. A Review of Substances (Not) Commonly Recognized as Poisonous 5. Domesticated Poisons Alcohol, Nicotine, and Legal Highs What Is the Mechanism of Toxic Action? 6. Does "Herbal" Mean Safe Poisons of Plant and Animal Origin 7. The Top Class of Poisons Chemical Weapons, What Was Sergei Skripal Poisoned With? 8. Substances We Wouldn't Expect to Do "This," or Was Paracelsus Right? 9. The Liver and Kidneys in the Crosshairs What Happens to Internal Organs During Poisoning?						
	Course content – laboratory Laboratory (teamwork) 1. Detection of alkaloids 2. Synthesis of a safe organophosphate compound as a model for detecting "poisons." 3. Test for organophosphate compounds 4. Synthesis of an acetylcholinesterase reactivator e.g., azoxime, pralidoxime, etc. 5. Synthesis of a cyanide antidote.						
Prerequisites and co-requisites	Basic knowledge of organic chemistry, including the properties and reactivity of basic groups of organic compounds such as aliphatic and aromatic hydrocarbons, alkyl halides, alcohols, amines, aldehydes and ketones, phenols, carboxylic acids and their derivatives, and amino acids.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	40.0%
		60.0%	60.0%
Recommended reading	Basic literature	An Introduction to Toxicology Philip C. Burcham DOI 10.1007/978-1-4471-5553-9	
	Supplementary literature	Medical Toxicology: Antidotes and Anecdotes Steven M. Marcus, MD DOI 10.1007/978-3-319-51029-3	
	eResources addresses		
Example issues/ example questions/ tasks being completed	What is the mechanism of fluorophosphonate poisoning? What antidote would you use after exposure to sarin? Which compound is more dangerous: HgCl ₂ or dialkylmercury? How can you neutralize cyanides in solution?		
Practical activities within the subject	Not applicable		

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