



## Subject card

Subject name and code	Photochemistry, PG_00048560						
Field of study	Chemical Technology						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Inorganic Chemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Agnieszka Pladzyk				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	15.0	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		2.0		28.0	75
Subject objectives	The aim is for the student to acquire basic knowledge of various physical, chemical and biological processes induced by electromagnetic radiation and the practical practical use of such processes in modern technologies, medicine and environmental protection.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W02		Students will gain necessary knowledge necessary to explain properties of compounds and phenomena based on photochemical processes occurring in the environment, as well as participation of light in chemical processes		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
Subject contents	Basic photochemical principles and concepts - electron excited states, Franck- Condon rule, Jablonski diagram, selection rules, extinction of excited states. Photochemical reactions In solutions, quantum yield of photochemical reactions, actinometry. Photochemistry of the atmosphere. Applied photochemistry - industrial photochemical syntheses, photochromism, photolithography, OLEDs, optical brighteners. Photochemistry of polymers- photopolymerization and photodegradation of polymers, photoinitiators polymerization. Photochemical methods of solar energy storage. Photochemistry in biology and medicine Medicine - vision process, UV filters, phototherapy. The application of photochemical processes in environmental protection environmental protection.						
Prerequisites and co-requisites	Knowledge of physics, inorganic chemistry, organic chemistry, physical chemistry, biochemistry						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Ten short tests on the lecture material		60.0%		50.0%		
	seminar - multimedia presentation multimedia presentation on a given topic		60.0%		50.0%		
Recommended reading	Basic literature		1. Paul Suppan "Chemia i światło" PWN Warszawa 1997. 2. Stefan Paszyc "Podstawy fotochemii" PWN Warszawa. 1992 3. "Fotochemia polimerów. Teoria i zastosowanie" Praca zbiorowa pod red, J. Pańczkowskiego Wydawnictwo UMK 2003. 4. Zofia Stasicka "Procesy fotochemiczne w środowisku" Wydawnictwo UJ 2001.				

	Supplementary literature	1. C. E. Wayne, R. P. Wayne "Photochemistry" Oxford University Press 2005. 2. Nicholas J. Turro "Modern Molecular Photochemistry" University Science Books, CA 1991 3. J. A. Baltrop, J. D. Coyle "Fotochemia, Podstawy" PWN Warszawa 1987.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1 Jablonski diagram 2. types of quenching of excited states. 3. photochemical processes in the atmosphere 4. photodegradation and photostabilization of polymers 5. Removal of environmental pollutants using photochemical processes	
Work placement	Not applicable	