



## Subject card

Subject name and code	Thermophotovoltaics, PG_00039478						
Field of study	Technical Physics						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Fizyki Organicznych i Perowskitowych Struktur Fotowoltaicznych -> Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Damian Głowienka				
	Teachers		dr inż. Damian Głowienka				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
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	15		2.0		8.0	25
Subject objectives	Learning the basics of the construction and operation of a thermophotovoltaic cell						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K01] Knows limitations of own knowledge. Understands the need to learn and improve professional and personal competencies.		The student learns the basics of operation of a thermophotovoltaic cell, as well as their wide application in industry.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W03] Has general knowledge of current development paths and discoveries in the scope of physics and related fields of science and technology.		During the lecture, technological innovations in laboratory and industrial research for thermophotovoltaic cells will be presented.		[SW1] Assessment of factual knowledge		
Subject contents	1. Introduction to thermophotovoltaics 2. Efficiency of a thermophotovoltaic cell 3. Emitters (radiators) 4. Infrared filters 5. Photovoltaic cells 6. Methods of characterizing thermophotovoltaic cells 7. Modeling of a thermophotovoltaic cell						
Prerequisites and co-requisites	1. Basics of semiconductor physics, 2. Basics of solar cell physics						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Passing the exam		50.0%		100.0%		
Recommended reading	Basic literature		1. Thomas Bauer Thermophotovoltaics. Basic Principles and Critical Aspects of System Design  2. Donald Chubb Fundamentals of Thermophotovoltaic Energy Conversion				

	Supplementary literature	2012 Energy & Environmental Science 5(10):8815-8823
	eResources addresses	Adresy na platformie eNauczenie: Termofotowoltaika - Moodle ID: 37213 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37213">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37213</a>
Example issues/ example questions/ tasks being completed		<ol style="list-style-type: none"> <li>1. Name and describe the basic elements of a thermophotovoltaic cell?</li> <li>2. What is the difference between a solar cell and a thermophotovoltaic cell?</li> </ol>
Work placement		Not applicable