

Subject card

Subject name and code	Fundamentals of Physics - lecture, PG_00132594						
Field of study	Criminology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Optional subject group		
Mode of study	part-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Faculty of Law and Administration -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anna Synak				
	Teachers						
Lesson types	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		0.0		35.0	50
Subject objectives	Objectives of the course: - learning the basic laws and principles of physics. - learning the physical phenomena underlying physicochemical research in forensics, - learning various physical quantities, their units - learning how to formulate research problems in commissioned expert opinions in the language of physics.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[KRYMMU2_KK01] Is aware of the level of his knowledge and skills, and understands the need for lifelong learning	The student – as a future client of expert reports – is able to start a scientific conversation between experts and representatives of the justice system. Has knowledge of physics, enabling him to understand the methods used by the expert to perform the commissioned reports. Knows how the equipment used in various expert tests in forensics works. Develops logical, creative and critical thinking. Gets used to working in a team, acquires the ability to discuss and precisely formulate statements. Sees the need for lifelong education and development.	[SK3] text preparation/written work
	[KRYMMU2_WG01] Has an in-depth knowledge of the nature of legal and related penal sciences, their place in the system of sciences and their interrelationships	The student has in-depth knowledge of physics needed to lead discussions and present conclusions in teams of specialists and interdisciplinary teams.	[SW1] oral statement/ conversation/discussion
	[KRYMMU2_WG03] Has an enhanced knowledge of the subject matter of the regulation of individual branches of law related to the studied major	The student has the knowledge of physics necessary to independently evaluate the value of the expert opinion results.	[SW1] oral statement/ conversation/discussion
Subject contents	Due to the addressees of the lecture, mathematical derivations of the laws and principles of physics have been omitted, while the relationships between various physical quantities and the analysis of physical phenomena in terms of their usefulness and use in various physical and physicochemical studies used in expertise will be emphasized.Lecture topics:Kinematics and dynamics of a material point and a rigid body. Conservation principles: momentum, angular momentum, energy. Vibrations and waves. Elements of fluid mechanics. Thermodynamics of physical processes. Electromagnetism: electric and magnetic properties of matter, electric and magnetic fields, electromagnetic waves. Geometrical and wave optics. Atomic and molecular physics: structure of atoms, atomic and molecular spectra, principle of laser operation. Elements of nuclear physics: properties of atomic nuclei, radioactivity.		
Prerequisites and co-requisites	not applicable		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	51.0%	100.0%
Recommended reading	Basic literature	Holliday D.: Resnick R.: Walker J., Principles of physics, John Wiley&Sons	
	Supplementary literature	R.P Feynman, R.B. Leighton, M.Sands, Feynman Lectures on Physics, 1-3,Basic Books Atkins P.W., Physical Chemistry, Oxford University Press J.F Shelley, Engineering Mechanics:Statics and Dynamics, McGraw-Hill Inc.,US Materiały własne.	
	eResources addresses	Adresy na platformie eNauczanie:	
	Example issues/ example questions/ tasks being completed		

Work placement	Not applicable
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