



## Subject card

Subject name and code	, PG_00064558						
Field of study	Mechatronics						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group					
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			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Ogrzewnictwa, Wentylacji, Klimatyzacji i Chłodnictwa -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Michał Klugmann				
	Teachers						
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		0.0		0.0	15
Subject objectives	The aim of the course is to comprehensively familiarize students with the techniques of recording and reproducing image and sound, starting from the history and creation of these techniques, ending with the latest tools. This will allow you to understand visualization measurement methods, their nuances and sources of errors. Particular emphasis will be placed on how computers work in image generation and analysis and on how a digital image is constructed.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W13] knows general rules of establishing and development of a private, small business that applies knowledge from engineering and technical sciences and scientific disciplines, adequate for mechatronics		Understanding the dynamics of development and the need to constantly monitor changes in young and intensively developing fields.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_K02] is aware of social role of the technical university alumni, the importance of professional attitudes, obeying ethic rules with respect to diverse point of views and cultures, understands the need for permanent self-learning		Knowledge of the historical foundations that shaped modern measurement techniques. Knowledge of the historical background, allowing you to trace the development, but also the ethical and ecological aspects of the development of selected techniques.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K6_K01] is aware of non-technical aspects, individual and collaborative work responsibility and is capable to comply to rules of team cooperation and to take responsibility for collectively performed tasks		Ability to select tools in an economically justified way. Knowledge of limitations and nuances, allowing for optimization of the techniques used.		[SK2] Assessment of progress of work		

Subject contents	<p>1. A historical outline of sound recording techniques, photography, cinematography and television in the analog era.</p> <p>2. A shortened history of computers in terms of the ability to generate images and sounds.</p> <p>3. Principle of operation of a digital computer, method of recording and generating digital sound, construction of a digital image. Discussion from a historical perspective - how graphic modes and formats were developed, etc.</p> <p>4. Digital techniques for recording, processing and interpreting sound and image: static photography, video, 3D, 360 degrees, drones. related techniques: high-speed photos, thermal imaging, liquid crystal thermography.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
Recommended reading	Essay	56.0%	100.0%
	Basic literature	No English literature.	
	Supplementary literature	Archival magazines about computers and audio-video techniques.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<p>Comparison of digital and analog signal transmission.</p> <p>Issues of digitization of sound and image.</p> <p>Lossless and lossy image and sound recording formats - what are their origins and features?</p> <p>Light sources and their features.</p>		
Work placement	Not applicable		