



Subject card

Subject name and code	, PG_00064558						
Field of study	Mechanical and Medical Engineering						
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_K01] he/she knows his/her proficiencies and his/her limitations in performing professional tasks, he/she is aware of needing to improve his/her skills through the whole life, he/she has entrepreneurship and innovation skills, he/she is aware of engineering skills from the society point of view		Understanding the dynamics of development and the need to constantly monitor changes in young and intensively developing fields.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K6_K02] he/she is aware of importance of professional dealing and to fulfill ethics obligations, he/she understands other (non-technical) abilities of mechanical engineering professional, their influence on the society and security of environment, he/she is aware of importance of social cooperation		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.		[SK2] Assessment of progress of work		
	[K6_W11] he/she is aware of social and juridical rules and general rules of creation and developing of individual entrepreneurship, business and quality management		Ability to select tools in an economically justified way. Knowledge of limitations and nuances, allowing for optimization of the techniques used.		[SW3] Assessment of knowledge contained in written work and projects		

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
	Essay	56.0%	100.0%
Recommended reading	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		