



Subject card

Subject name and code	Informatics III, PG_00039415						
Field of study	Mechatronics, Mechatronics						
Date of commencement of studies	October 2020	Academic year of realisation of subject				2022/2023	
Education level	first-cycle studies	Subject group				Obligatory subject group in the field of study 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	3	Language of instruction				Polish	
Semester of study	5	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Mechanics and Mechatronics -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Galewski					
	Teachers	dr hab. inż. Marek Galewski dr hab. inż. Stefan Dzionk					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
Informatyka III, WL, MTR, I st., sem. 05, zimowy 22/23 (PG_00039415) - Moodle ID: 23755 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=23755							
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	30	5.0	15.0	50		
Subject objectives	Presenting digital signal and image processing as well as rapid prototyping techniques to the students						
Learning outcomes	Course outcome	Subject outcome				Method of verification	
	K6_U04	Students performs basic image operations (using appropriate tools). Student avoids problems like: frequency leakage and aliasing. Student interprets signal spectrum.				[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools	
	K6_W07	Student properly chooses Analog-to-digital channel parameters				[SW1] Assessment of factual knowledge	
	K6_U05	Student presents basic techniques of Rapid Prototyping. Student converts CAD model in tu RP models.				[SU4] Assessment of ability to use methods and tools	
	K6_U09	Student develops simple programmes in LabView				[SU4] Assessment of ability to use methods and tools	
K6_W01	Student understands analytical fundamentals of Fourier Transform and sampling theorem				[SW1] Assessment of factual knowledge		
Subject contents	Rapid prototyping Rapid prototyping techniques, data formats, CAD data conversion, conversion errors, Basic methods and techniques of rapid prototyping, reverse engineering, RP/RT/RE techniques Signal processing: A/C and D/A conversions, basic signal parameters, Fourier transformation and signal spectrum, FFT, IFFT, frequency leak, time windows, theory of sampling, aliasing Image processing: Creation and representation of digital image, geometrical transformations, point transformations - contextual and non-contextual, spectral transformations, morfological transformations, basic image recognition techniques						
Prerequisites and co-requisites	Passed Computer Science I and II courses						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Practical exercises	52.0%			20.0%		
	Midterm colloquium	52.0%			80.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Lecture materials published at the web site of the chair of Mechanics and Mechatronics 2. Laboratory exercises handbook
	Supplementary literature	<ol style="list-style-type: none"> 1. Chlebus E., Techniki komputerowe CAx w inżynierii produkcji, WNT, 2000 2. Chlebus E., Innowacyjne technologie Rapid Prototyping / Rapie Tooling w rozwoju produktu, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2003 3. Lyons G.R., Wprowadzenie do cyfrowego przetwarzania sygnałów, WKiŁ, Warszawa, 1999 4. Szabatin J., Przetwarzanie sygnałów, Warszawa, 2003 5. Tadeusiewicz R. Korohoda P., Komputerowa analiza i przetwarzanie obrazów, Wydawnictwo Fundacji Postępu Telekomunikacji, Kraków, 1997 6. Tłaczała W.: Środowisko LabVIEW w eksperymencie wspomaganym komputerowo. WNT, Warszawa 2005
	eResources addresses	
Example issues/ example questions/ tasks being completed	Students receive a list of potential questions a few weeks before the colloquium	
Work placement	Not applicable	