



Subject card

Subject name and code	Concurrent and parallel programming, PG_00037344						
Field of study	Technical Physics						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
Education level	first-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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Wilczewski					
	Teachers	dr hab. Jan Franz dr inż. Marcin Wilczewski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	E-learning hours included: 0.0						
Additional information:							
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	45	10.0		45.0	100	
Subject objectives	The goal of the course is to introduce students into the area of design and programming concurrent and parallel programs. In particular will be shown how to design, implement and evaluate the quality of programs.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_K01	The student knows the scenarios where the use of concurrent or parallel programming is necessary to solve the problem			[SK5] Assessment of ability to solve problems that arise in practice		
	K6_W05	The student learns how to solve the classical concurrency problems			[SW1] Assessment of factual knowledge		
	K6_U03	The student practices Java programming			[SU1] Assessment of task fulfilment		
Subject contents	<ol style="list-style-type: none">1. The fundamentals of concurrent programming: basic concepts.2. Classical concurrent problems: readers-writers, consument-producers, etc.3. Centralized and distributed systems.4. Threads synchronization.5. Fundamentals of concurrent programming in Java.6. Fundamentals of Apache Spark ecosystem7. The practice of Apache Spark						

Prerequisites and co-requisites	The fundamentals of Java and/or python programming.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written test (10 points) and laboratory (30 points). Total 40 points.	0.0%	25.0%
	Lab (30 points)	0.0%	75.0%
Recommended reading	Basic literature	M. Ben-Ari, "Principles of Concurrent and Distributed Programming", Addison-Wesley, II edition, 2006.	
	Supplementary literature	none	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. Paradigm of concurrency. 2. Correctness evaluation of concurrent programs. 3. Thread and process synchronization.		
Work placement	Not applicable		