

1.	Field of study	Computer Science
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2020/2021 (summer term), 2021/2022 (winter term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	part-time

Module: Concurrent programming

Module code: W4-IN-N2-20-2-PW

1. Number of the ECTS credits: 2

2. Learning outcomes of the module			
code	description	learning outcomes of the programme	level of competence (scale 1-5)
M_001	Has extended knowledge of the ways in which parallel and concurrent computing are performed on modern computers.	K_U09 K_W02	1 1
M_002	Has knowledge about the safety properties of concurrent programs and is able to verify that the given concurrent algorithm is correct.	K_U05 K_U09 K_W02 K_W04 K_W05	1 1 1 1 1
M_003	Is able to identify and solve typical problems of concurrent computations.	K_K04 K_U05 K_U09 K_W02 K_W04 K_W05	1 1 1 1 1 1
M_004	Is able to assess the effectiveness of a parallel algorithm.	K_U05 K_W02 K_W04	1 1 1

3. Module description	
Description	The aim of the course is to introduce students to the subject of design and implementation of correct and efficient concurrent algorithms. The practical aspects of the presented issues are emphasized, and examples made using modern programming languages and tools are presented.
Prerequisites	

4. Assessment of the learning outcomes of the module			
code	type	description	learning outcomes of the module
W_001	Final test.	Students are tested on the knowledge gained during lectures and laboratory classes. The test consists of a number of closed and (optionally) open questions.	M_001, M_002, M_003, M_004
W_002	Test.	At least one test assessing the knowledge gained by students during laboratory classes.	M_001, M_002, M_003
W_003	Programming assignment.	An optional programming assignment (project) that checks the programming skills acquired during the course.	M_001, M_002, M_003, M_004

5. Forms of teaching						
code	form of teaching			required hours of student's own work		assessment of the learning outcomes of the module
	type	description (including teaching methods)	number of hours	description	number of hours	
Z_001	lecture	Presentation of the course material in spoken and written forms, supplemented with multimedia content. Emphasizing issues that are more difficult to understand and have deeper theoretical foundations. Engaging listeners by asking questions about the content presented.	10	Reading recommended books and articles. Analysis and repetition of lecture content. Preparation for the final test.	15	W_001
Z_002	laboratory classes	Preparation of students to apply the knowledge in programming practice through the presentation of sample programs and programming tools. Discussion of the methodology by pointing out the key steps required to obtain correct and efficient solutions to typical concurrent programming problems.	10	Working on assignments. Studying the recommended literature.	25	W_002, W_003