1.	Field of study	Computer Science
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2019/2020 (summer term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

Module: Parallel computing

Module code: 08-IN-S2-OR

1. Number of the ECTS credits: 4

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
OR_K_8	Is able to formulate opinions on the basic issues, contemporary status, and development trends in the area of parallel computing.	K_K01	1
OR_U_5	Is able to carry out the analysis of work and evaluation of metrics that characterize a parallel algorithm, such as time complexity, speedup, cost, and efficiency.	K_U07 K_U12	1 1
OR_U_6	Is able to design and implement an elementary parallel algorithm using the OpenMP interface, and the message passing interface (MPI) library.	K_U07 K_U12	1 1
OR_U_7	Is able to work in a two-member team, and to make a proper division of the workload.	K_U02	1
OR_W_1	Has the knowledge concerning the random access machine (RAM) model.	K_W04 K_W06	1 1
OR_W_2	Has the knowledge concerning the parallel random access machine (PRAM) model.	K_W04 K_W06	1 1
OR_W_3	Has the knowledge concerning the network model of parallel computation with various topologies (multidimensional meshes, hepercube, butterfly network).	K_W04 K_W06	1 1
OR_W_4	Has the knowledge concerning the elementary parallel algorithms to solve sample problems, e.g. reduction problem, prefix computation, sorting, matrix multiplication, for the PRAM model and network models of various topologies.	K_W04 K_W06	1 1

3. Module description

Description	

	The purpose of the course is to introduce students to the basic topics of parallel computing. Students acquire knowledge regarding elementary parallel algorithms designed for various models of parallel computation. In addition, they acquire the ability to implement elementary parallel algorithms.
Prerequisites	

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
OR_w_1	Control test	The written control test to check the knowledge concerning the topics discussed at the lectures, and carried out within the laboratory.	OR_K_8, OR_U_5, OR_U_6, OR_U_7, OR_W_1, OR_W_2, OR_W_3, OR_W_4
OR_w_2	Programming project	Implementation of a simple programming project enabling practical verification of the acquired knowledge and skills related to parallel computing.	OR_K_8, OR_U_5, OR_U_6, OR_U_7
OR_w_3	Homework assignment	Homework assignment on three topics presented at the lecture.	OR_K_8, OR_W_1, OR_W_2, OR_W_3, OR_W_4

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	
OR_fs_1	lecture	Oral presentation of education content using the audiovisual media and written didactic materials.	15	Get acquainted with the topics presented during the lectures using the indicated literature references.	30	OR_w_3
OR_fs_2	laboratory classes	Preparing students to create an implementation of elementary parallel algorithms. The presentation of tools that helps to implement the parallel computation.	15	Get acquainted with the documentation of tools for implementing parallel algorithms. Implement a programming project using the presented tools.	60	OR_w_1, OR_w_2