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

Module: GPGPU computing

Module code: W4-IN-S2-20-F-ONKG

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)
M_001	He knows the hardware architecture of GPUs and graphics cards, knows the mechanisms and structures of CPU-GPU communication. Knows the properties of parallel algorithms, understands parallelization techniques at the level of instructions, data and tasks.	K_K01 K_U01 K_W03	1 1 1
M_002	Knows the rules of programming GPUs using CUDA C, knows and understands the functionality of the DirectCompute library and OpenCL language in parallel processing.	K_K01 K_U01 K_U05 K_U06 K_W02 K_W04 K_W05	1 1 1 1 1 1 1
M_003	Is able to work individually or in a team, understands the importance of intellectual honesty in their own activities and other people act ethically. He understands the need to constantly improve his competences. Is able to think in a creative way, form opinions on basic issues, current state and development trends in IT and understands non-technical issues of professional activity.	K_K01 K_K02 K_K03 K_U01 K_U02 K_U03 K_U04 K_W02	1 1 1 1 1 1 1 1

		K_W04	1

3. Module description	
Description	The aim of the course is to acquaint the student with the technique of parallel computing on GPUs. The subject course covers the basics of CUDA C, DirectCompute and OpenCL as well as hardware aspects of calculations on graphics cards.
Prerequisites	

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
W_001	Project	Implementation of a semester project in the field of learning outcomes adopted in the module	M_001, M_002, M_003
W_002	Project presentation	Audiovisual presentation on the forum of a group of students, discussion of assumptions and adopted method of solving a specific problem, analysis and assessment of the implementation of the project goal.	M_003
W_003	Test	Test with open and closed questions	M_001, M_002

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	Content of module training with the use of audiovisual means.	15	Independent study of lecture topics and recommended literature	30	W_003
Z_002	laboratory classes	Practical implementation of the learning content of the module, including on the acquisition of skills and experience of efficient use of CUDA C, DirectCompute or OpenCL libraries. Classes are held using computer stations and appropriate software	30	1. Individual preparation for laboratory classes 2. Individual or multi-person group project execution and its documentation 3. Preparation of the presentation in audiovisual form about the completed project and its presentation on the forum of a group of students	45	W_001, W_002