1.	**Field of study**	**Computer Science**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2021/2022 (summer term), 2022/2023 (winter term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	part-time

Module: Selected graph algorithms

Module code: W4-IN-N2-20-F-WAG

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 is familiar with the concept, features and types of graphs, including trees.	K_W01 K_W04 K_W09	1 1 1
M_002	Understands the functioning of graph algorithms and trees used to solve selected practical problems.	K_W02 K_W04 K_W09	1 1 1
M_003	Can apply an appropriate algorithm to solve a given problem.	K_U01 K_U08	1 1
M_004	The student is able to construct a solution to a given problem according to a specific algorithm and program it in the chosen programming language.	K_U01 K_U02 K_U03	1 1 1
M_005	The student can work in a project-programming team.	K_K01 K_K03 K_K05	1 1 1
M_006	He knows how to implement graphs, including trees, using tables and pointers.	K_W01 K_W09	1 1
M_007	The student is able to implement graphs and trees using data structures available in particular programming languages.	K_U03	1

		K_U04 K_U09	1 1

3. Module description	
Description	The aim of the course is to familiarize students with the basic knowledge of graph theory and selected graph algorithms. Practical problems are discussed for which graph representation can be applied and one can solve them by means of appropriate graph algorithms.
Prerequisites	

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
W_001	Evaluation of presentation and computer implementation	Students develop their own software, the specification of which is given by the teacher, and make presentations on a chosen topic from the given list.	M_001, M_002, M_003, M_004, M_005, M_006, M_007
W_002	Evaluation work	Written mid-term test (including a test performed on a computer during classes)	M_001, M_002, M_003, M_006, M_007
W_003	End-term test	Students answer test questions and describe problems in answering open questions	M_001, M_002, M_003, M_004, M_006, M_007

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	Giving the educational content in verbal form with the use of content visualization. Focusing on conceptually difficult material and indicating sources. Illustrating the content using examples.	15	Getting to know the topic of the lecture using the existing packages of methods: manuals, scripts, websites, etc.	30	W_003
Z_002	laboratory classes	Detailed training of students to solve tasks with reference to the methodology of proceeding, showing the sequence of activities performed. Designing solutions and their computer implementation. The students' presentation of their solutions.	30	Solving tasks from particular topics together with analysis of already existing solutions - in materials and on websites. Preparing issues to be discussed or preparing for catching up.	45	W_001, W_002