COURSE SYLLABUS AND COURSE REQUIREMENTS
ACADEMIC YEAR 2023/2024 SEMESTER AUTUMN

Course title	*Algorithm design*
Course Code	IVB364ANMI
Hours/Week: le/pr/lab	2/0/0
Credits	2
Degree Programme	Computer Science Engineering / BSc
Study Mode	*Full time*
Requirements	Mid-term grade
Teaching Period	Autumn
Prerequisites	-
Department(s)	Department of System Software Technology
Course Director	
Teaching Staff	*Péter Iványi*

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).
Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

The concept of an algorithm, how it is represented. Simple algorithms. Computability, complexity theory, P and NP problems. Basic data structures: array, row, stack, list, tree and graph. Graph theory basics and algorithms. Search algorithms, depth and breadth-first search. Sorting algorithms. Hash tables, clash resolution. Recursion and recursive algorithms

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.
Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

The main objective of the course is to introduce students to the concept of algorithm and the formal treatment of programming tasks, and to present some well-known and commonly used algorithms for different data structures.

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

TOPICS

LECTURE	
	1. The concept of an algorithm, how it is represented.
	2. Programming theorems. Basic data structures: array
	3. Computability, complexity theory, P and NP problems.
	Basic data structures: row, stack,
	5. Basic data structures: list, tree
	6. Basic data structures: graph. Graph theory basics and algorithms.
	7. Search algorithms, depth and width search.
	8. Sorting algorithms. Hash tables, clash resolution.
	9. Recursion and recursive algorithms

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	Topic	Compulsory reading; page number (from … to …)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	Introduction			
2.	Algorithms	[1] – Chapter 1, 2		
3.	Elementary algorithms			
4.	--- Cancelled --- MIK Partners Day			
5.	Array and lists	[1] – Chapter 10		
6.	Algorithmic complexity and practice	[1] – Chapter 3		
7.	Recursion			
8.	Tree and graph structures	[1] – Chapter 12, 13, 18, 20		
9.	--- Cancelled --- PhD Symposium			
10.	Hash tables	[1] – Chapter 11		
11.	Representation of numbers and practice			
12.			Practical test	
13.			Retake	

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance *(e.g.: attendance sheet / online test/ register, etc.)*

Attendance at 70% of classes is mandatory. The participation rate does not affect the grade, but an absence of more than 30% results in the subject being failed.
Attendance is checked on the basis of an attendance sheet

ASSESSMENT

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course-unit with final examination

Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam
(The samples in the table to be deleted.)

Type	Assessment	*Weighting as a proportion of the pre-requisite for taking the exam*
1. *Homework*	*Accepted – Not-accepted*	*100 %*

Requirements for the end-of-semester signature
(Eg.: mid-term assessment of 40%)

Satisfactorally finish the homework.

Re-takes for the end-of-semester signature (PTE TVSz 50§(2))

The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

If the homework is not accepted, it can be resubmitted on the 1st week of the exam period.

Type of examination *(written, oral):* written

The exam is successful if the result is minimum 40 %. *(The minimum cannot exceed 40%.)*

Calculation of the grade *(TVSz 47§ (3))*
  The mid-term performance accounts for **0** %, the performance at the exam accounts for **100** % in the calculation of the final grade.

Calculation of the final grade based on aggregate performance in percentage.

Course grade	Performance in %
excellent (5)	85 % …
good (4)	70 % … 85 %
satisfactory (3)	55 % … 70 %
pass (2)	40 % … 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE
In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY
[1.] THOMAS H. CORMEN, CHARLES E. LEISERSON, RONALD L. RIVEST, CLIFFORD STEIN: Introduction to Algorithms, 4th Edition, MIT Press, 2022, ISBN 9780262046305