OURSE SYLLABUS AND COURSE REQUIREMENTS
ACADEMIC YEAR2025/26 SEMESTER 1

Course title	*Problem classes*
Course Code	VB052ANMI
Hours/Week: le/pr/lab	2 / 0 / 0
Credits	4
Degree Programme	Computer science engineering BSc
Study Mode	*Full-time*
Requirements	Final exam
Teaching Period	2025/26-1
Prerequisites	-
Department(s)	Systems and Software Technologies
Course Director	
Teaching Staff	*Dr. STORCZ, Tamás*

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. *Problem, algorithm, representations* 2. *Elementary algorithms* 3. *Data structures and their algorithms* 4. *Number representations and operations* 5. *Complexity theory*

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, connection to programming			
2.	Problem, algorithm, representation			
3.	Elementary algorithms			
4.	Array, Pointer, Record, Dynamic List			
5.	Methods, recursion, elementary instructions			
6.	Practice		Homework	Week #10
7.	Data structures and their algorithms			
8.	Holiday			
9.	Graph, tree, search, sort			
10.	Other graph algorithms			
11.	Hash tables		HW resubmission	Week #13
12.	Number representations and operations			
13.			Midterm exam	
14.			Midterm exam 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.*

on-line tests

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***	*success/failure*	*50%*
2. ***Midterm exam***	*20*	*50%*

Requirements for the end-of-semester signature

(Eg.: mid-term assessment of 40%)

Midterm exam minimum 40%

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.

On week 14

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.] Tamas Storcz: Problem classes, algorithms, data structures - Lecture notes

RECOMMENDED LITERATURE AND AVAILABILITY

[2.] Cormen, Leiserson, Rievst, Stein: Introduction to Algorithms (The MIT Press)
[3.] Sedgewick, Wayne: Algorithms (Princeton University)
[4.] Erickson: Algorithms