Algorithms and Data Structures

Lecturer: Andrzej Pisarski.

Recommended books:

1. Rober Lafore – „Data Structures and Algorithms” (available in the library).
2. Robert Sedgewick, Kevin Wayne – „Algorithms”.
3. Robert Sedgewick – „Algorithms in C++”.

Exam (to choose):

I. Credit laboratory:

Colloquium at the end of the semester (probable date: **2025-06-09**).
Grade 5: Solve two tasks (writing two programs).
Grade 4: Solve one task (to write one program).
Grade 3: Work at class (no more than 3 absences).

Tasks will be based on the material from classes.
At the time of writing programs, you can use the notes.

OR

II. Project (C++ / Java)

A Few examples of project to do:

1. Huffman code:
   a) write a program to coding (compression) any text file with Huffman algorithm,
   b) write a program to decode (decompress) file, encoded with Huffman algorithm; save result into a text file;
   (points *a)* and *b)* for grade 5).
2. Implement deleting method of any node (with a given key) of the tree BST, AVL or RBT (you may choose type of tree; before deleting of a node implement method to inserting nodes with randomly generated keys).
3. Other non-trivial algorithm (eg. a dictionary compression algorithm LZ77, simplified encryption algorithm AES (Simplified AES)).