Level: bachelor

Course title: Data Structures and Algorithms 3 (code I384)

Status: obligatory for the *Computer Science* module, elective for *Information Technologies* module

ECTS: 7

Requirements: Completed course in Data Structures and Algorithms 2

Learning objectives
Students learn to understand and use data structures GRAPH and TREE.

Learning outcomes
Minimal: Students are expected to implement different types of TREES and GRAPHS
Desirable: Students are expected to implement different types of TREES and GRAPHS and to recognize desirable structure for problem solving.

Syllabus
Theory
Abstract data type TREE and its implementations. Tree traversals. Search tree. Balanced search tree and its analysis. Different types of balanced tree (AVL-tree, B-tree, red-black tree, etc.) Other kinds of trees. Abstract data type GRAPH and its implementations. Basic graph implementations. Graph traversals (depth-first search, breath-first search). Applications.

Practice
Implementations of data structures TREE and GRAPH and their different applications.

Weekly teaching load				Other: 0
Lectures: 2	Exercises: 3	Other forms of teaching: 0	Student research: 0	