Itä-Suomen ICT-polku

COURSE DATA

BASIC INFO

Name	Data Structures and Algorithms I		
Code	Savonia: ETX7100 Karelia: LTD7004 UEF: 3621414		
Name in Finnish	Tietorakenteet ja algoritmit I		
Credits (ECTS)	5	**Grading**	0 - 5
Teaching period	2S		
Language	Finnish		
Type	Savonia: mandatory course Karelia: elective course UEF/TKT: mandatory course		

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DESCRIPTION

Objectives	After completing the course student understands the importance of algorithms and can analyse asymptotic time complexity of simple algorithms. Student can select and reason about a correct data structure (abstract data type) for an application and use the chosen structure efficiently. Student can use efficiently the standard library of his/her programming language. Student knows and can implement most common abstract data types, list, tree, and set. Student can design and implement an algorithm for a simple problem. Student can search, select, and apply a proper algorithm from literature for given problem. Student knows the principle of recursion and can implement a recursive algorithm.
Content	Algorithms and running time analysis. Abstract data types. Implementing data structures. Searching and sorting algorithms. Simple recursive algorithms.
Modes of study	Exam + exercises
Study materials	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein: Introduction to Algorithms, 3rd Ed. The MIT Press, 2009. Lecture notes
Teaching methods	Lectures 32h, exercises 16h
Prerequisites	Programming I and III, or similar skills. Recommended Programming II, or similar skills.
Other issues	