	G-LAS12 80006 LE10		
< >	Introduction to Algorithms and Informatics Introduction to Algorithms and Informatics		Jesper Jansson

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An algorithm is a well-defined procedure for solving a computational problem.
Reliable algorithms have become crucial components of people's daily lives; for example, the Internet or our smartphones would not work without them.
The purpose of this course is to provide a basic introduction to algorithms for graduate students.
General techniques for designing algorithms and analyzing their efficiency, as well as examples of widely used algorithms with important real-life applications, will be presented.

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After completing this course, the student should be able to:
- Apply various algorithm design techniques for solving computational problems.
- Prove the correctness of an algorithm and measure its efficiency.
- Explain how famous algorithms such as Prim's algorithm, Quicksort, the Karp-Rabin algorithm, and Graham's scan work.

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The course will cover the following topics:
1. Introduction
2. Divide-and-Conquer
3. Greedy Algorithms
4. Dynamic Programming
5. Randomized Algorithms
6. Advanced Sorting Algorithms
7. Hash Tables
8. Amortized Analysis
9. String Matching
10. Efficient Data Structures
11. Computational Geometry
12. NP-Completeness
13. Approximation Algorithms
14. Course summary and Q & A session
<<Final examination>>
15. Feedback

Introduction to Algorithms and Informatics(2)

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An ability to think abstractly and to solve problems of a mathematical nature will be required for this course. No programming skills are needed.

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A written examination at the end of the course.

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T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein   Introduction to Algorithms, 3rd Edition   The MIT Press, 2009   ISBN:978-0262033848
P. Louridas   Real-World Algorithms - A Beginner's Guide   The MIT Press, 2017   ISBN:978-0262035705

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Students will be expected to spend about 5 hours per week to prepare for and review the lessons.

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