SYLLABUS

# Algorithms for Big Data Processing 7.5 credits D7036E

## Algoritmer för stora datamängder

**Course syllabus admitted: Spring 2022 Sp 3 - Spring 2023 Sp 4**

DECISION DATE
**2021-02-17**

Luleå University of Technology 971 87 Luleå, Sweden
Phone: +46 (0)920 49 10 00 • Corporate Identity: 202100-2841

LULEÅ TEKNISKA UNIVERSITET

# Algorithms for Big Data Processing 7.5 credits D7036E

## Algoritmer för stora datamängder

## Second cycle, D7036E

| Education level | Grade scale | Subject | Subject group (SCB) |
| --- | --- | --- | --- |
| Second cycle | G U 3 4 5 | Datalogi | Computer Technology |

# Entry requirements

The student should have knowledge about basic algorithms and data structures, discrete mathematics, and probability.
For example: D0012E - Algorithms and Data Structures, M0009M - Discrete Mathematics and S0001M - Mathematical Statistics.

# Selection

The selection is based on 30-285 credits

# Examiner

Jingsen Chen

# Course Aim

After completing the course the student should be able to:

- demonstrate knowledge of the disciplinary foundation and of proven experience in the design and analysis of algorithms and data structures for large data sets
- demonstrate the ability to construct, analyze and critically evaluate various algorithmic solutions for large data sets with respect to correctness, efficiency, and reliability
- show knowledge of mathematical tools for designing and analyzing algorithms for large data sets
- demonstrate insight in the scientific state of the art in algorithms for large data sets
- demonstrate the ability to model, predict and evaluate the events even with limited information

# Contents

Topics covered include: paradigms and models, data stream algorithms, parallel algorithms, cache-oblivious algorithms.

# Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
Lectures, laborations/projects, and seminars.

# Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.
Seminars, assignments, compulsory attendance, oral and written presentation of projects. The final grade will be based on performance in all modules.

# Overlap

The course D7036E is equal to D7067E

# Literature. Valid from Spring 2016 Sp 3

Scientific publications (conference papers and journal articles).

# Course offered by

Department of Computer Science, Electrical and Space Engineering

# Modules

| Code | Description | Grade scale | Cr | Status | From period | Title |
| --- | --- | --- | --- | --- | --- | --- |
| 0003 | Project and assignments | G U 3 4 5 | 5 | Mandatory | S22 | |
| 0004 | Seminars and attendence | U G# | 2.5 | Mandatory | S22 | |

# Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

# Last revised

by Jonny Johansson, HUL SRT 2021-02-17

# Syllabus established

by Jonny Johansson, HUL SRT 2015-02-16