

# Big Data Analytics

Programme course

6 credits

Big Data Analytics

TDDE31

Valid from: 2021 Spring semester

**Determined by**

Board of Studies for Computer Science  
and Media Technology

**Date determined**

2020-09-29

## Main field of study

Information Technology, Computer Science and Engineering, Computer Science

## Course level

Second cycle

## Advancement level

A1X

## Course offered for

- Master's Programme in Computer Science
- Computer Science and Engineering, M Sc in Engineering
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- Information Technology, M Sc in Engineering
- Computer Science and Software Engineering, M Sc in Engineering
- Applied Physics and Electrical Engineering - International, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering
- Master's Programme in Mathematics

## Prerequisites

Basic database course. Data mining or machine learning course.

## Intended learning outcomes

After completed course, the student should on an advanced level be able to:

- collect and store Big Data in a distributed computer environment
- perform basic queries to a database operating on a distributed file system
- account for basic principles of parallel computations
- use the MapReduce concept to parallelize common data processing algorithms
- be able to modify standard machine learning models in order to process Big Data
- use tools for machine learning for Big Data

## Course content

The course introduces main concepts and tools for storing, processing and analyzing Big Data which are necessary for professional work and research in data analytics.

- Introduction to Big Data: concepts and tools
- Basic principles of parallel computing
- File systems and databases for Big Data
- Querying for Big Data
- Resource management in a cluster environment
- Parallelizing computations for Big Data
- Machine Learning for Big Data

## Teaching and working methods

The teaching comprises lectures and computer exercises.

Lectures are devoted to presentations of theories, concepts and methods.

Computer exercises provide practical experience of manipulation with Big Data.

## Examination

LAB1	Labs	3 credits	U, G
TEN1	Written exam	3 credits	U, 3, 4, 5

## Grades

Four-grade scale, LiU, U, 3, 4, 5

## Course literature

Article collection.

## Other information

Related courses: advanced data models and databases, parallel programming, multicore programming.

### About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is Swedish, the course as a whole or in large parts, is taught in Swedish. Please note that although teaching language is Swedish, parts of the course could be given in English. Examination language is Swedish.
- If teaching language is Swedish/English, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English (depending on teaching language).
- If teaching language is English, the course as a whole is taught in English. Examination language is English.

### Other

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

## Department

Institutionen för datavetenskap

## Director of Studies or equivalent

Patrick Lambrix

## Examiner

Olaf Hartig

## Course website and other links

<http://www.ida.liu.se/~TDDE31/>

## Education components

Preliminary scheduled hours: 42 h

Recommended self-study hours: 118 h

## Course literature

### **Other**

*Artikelsamling 2018.*