Big Data Analytics

Big Data Analytics
6 credits

Programme course

TDDE31

Valid from: 2026 Spring semester

Determined by	**Main field of study**	
Board of Studies for Computer Science and Media Technology	Information Technology, Computer Science and Engineering, Computer Science	
Date determined	**Course level**	**Progressive specialisation**
2025-08-28	Second cycle	A1F
Revised by	**Disciplinary domain**	
	Technology	
Revision date	**Subject group**	
	Computer Technology	
Offered first time	**Offered for the last time**	
Spring semester 2018		
Department	**Replaced by**	
Institutionen för datavetenskap		

Course offered for

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

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 for examination modules are decided in accordance with the assessment criteria presented at the start of the course.

Grades

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

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 could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- 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.

Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

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.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.