COURSE SYLLABUS
Data Analytics, 7.5 credits

Intelligent dataanalys, 7,5 högskolepoäng

Course Code:	TIGR21	**Education Cycle:**	Second-cycle level
Confirmed by:	Dean Mar 1, 2021	**Disciplinary domain:**	Technology
Valid From:	Aug 1, 2021	**Subject group:**	DT1
Version:	1	**Specialised in:**	A1N
		Main field of study:	Computer Engineering

Intended Learning Outcomes (ILO)

After a successful course, the student shall:

Knowledge and understanding
- display good knowledge of the task categories in data analytics
- display good knowledge of the different phases included in data analytics projects
- display knowledge of basic techniques and methods used in data analytics
- show familiarity with the most important research areas related to data analytics.

Skills and abilities
- demonstrate the ability to use software tools for all parts of a data analytics project
- demonstrate the ability to identify and use an appropriate technique for data analytics based on a given problem specification.

Judgement and approach
- demonstrate an understanding of ethical problems linked to data analytics
- demonstrate an understanding of how to use data analytics as a tool in different situations and problem domains.

Contents

The growth of data today is exponential in many different industries. Companies and organizations need the ability to organize and analyze their data to find valuable connections. Traditionally, data analytics has been conducted using various statistical methods, but today many of the most powerful technologies come from the subfield of artificial intelligence called machine learning. In practice, data analytics is about utilizing advanced algorithms to generate decision-making data from large and unstructured data sets, which in the long run constitute competitive advantages.

The course includes the following elements:
• The main task categories in data analytics, i.e. classification, regression, clustering, association rules and anomaly analysis.

• Basic statistical techniques for data analytics.
• Basic techniques from the field of machine learning used for data analytics.
• Organizing a data analytics project, and its various phases, ie. project understanding, data understanding, data preprocessing, modelling, evaluation and implementation.
• Software tool for data analytics.
• Data analytics and its use in specific domains.
• Ethical considerations regarding data analytics.
• Main research orientations for data analytics.

Type of instruction

Lectures and supervised labs.

The teaching is conducted in English.

Prerequisites

Passed courses 150 credits in first cycle and 30 credits in Mathematics including 7,5 credits in Statistics (or the equivalent).

Examination and grades

The course is graded 5,4,3 or Fail.

Registration of examination:

Name of the Test	Value	Grading
Written examination[I]	3 credits	5/4/3/U
Assignments	4.5 credits	U/G

[I] Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

The literature list for the course will be provided 8 weeks before the course start.

Title: Guide to Intelligent Data Science
Authors: Berthold, Borgelt, Höppner, Klawonn, & Silipo (2020)
Publisher: Springer
ISBN: 978-3-030-45573-6 (available online via bibliotekstjänst)

Lecture material, research papers and technical reports will be added according to teacher decisions.