UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

## COURSE SYLLABUS

# Big Data Analytics A1N

### 3 credits

**Course code:** IT793A
**Version number:** 2
**Valid from:** 1 July 2022
**Ratified by:** Curriculum Committee for Informatics
**Date of ratification:** 12 April 2022

## 1. General information about the course

The course is provided by the University of Skövde and is named Big Data Analytics A1N (Big Data Analytics A1N). It comprises 3 credits and is a second-cycle course. The level of progression is A1N.

The course is a part of the main field of study in Informatics. The disciplinary domain of the course is Technology.

## 2. Entry requirements

To be eligible to participate in the course at least 60 credits are required with the areas of informatics, product development, production technology, automation technology or mechanical engineering (or similar). A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as the Swedish course English 6. This is normally demonstrated by means of an internationally recognized language test, e.g. IELTS or TOEFL or the equivalent.

If academic prerequisites are not fulfilled, it is possible to apply to be assessed based on work experience.

## 3. Course content

This course is aimed at industrial professionals.

Predictions are central to any decision making, yet often in generating predictions the special nature of the problem is not considered. There are both methodological and modelling implications when switching from a descriptive to a predictive context. This course is designed to provide a thorough understanding of these differences, introduce the principal modelling families, and the intricacies of predictive experimental design. The course also discusses in depth the notions of uncertainty, predictability and causality, to better understand what these imply for the modelling, and the implicit limitations for the analysis. The course emphasizes that predictive modelling primarily is about supporting users and decision makers, and not just to create predictions.

More specifically, the course focuses on predictive modelling: data analysis and exploration for predictive modelling, extrapolative forecasting models, causal predictive models, use of domain expertise and judgement in data driven predictions, and evaluation of models and predictions.

## 4. Objectives

After completed course the student should be able to:

- account for predictive modelling principles,
- provide support for real decision making and solve predictive problems using different families of models,
- design and carry out valid experiments in a predictive setting,
- quantify prediction and modelling uncertainties and map how these connect to supporting users,
- model the limits of predictability and causality and how these can be estimated, and
- reflect on how predictive models and methods can be used in their own organization.

## 5. Examination

The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

The examinations of the course consist of the following modes of assessment:

- **Written assignment 1**
  1 credit, grades: G/U
- **Written assignment 2**
  2 credits, grades: A/B/C/D/E/F

Students with a permanent disability who have been approved for directed educational support may be offered adapted modes of assessment.

## 6. Types of instruction and language of instruction

The teaching is comprised of lectures, project work and seminars/group discussions.

The teaching is conducted in English.

## 7. Course literature and other educational materials

Course literature according to teachers' instructions on the page of the course on the learning platform.

## 8. Student influence

Student influence in the course is ensured by means of course evaluation. The students are informed about the results of the evaluation and potential measures that have been taken or are planned, based on the course evaluation.

## 9. Additional information

The course has been developed within the project WISER - Digital Transformation and Industrial Excellence, which is a cooperation between the University of Skövde and industrial partner companies. The project is financed by the Knowledge Foundation.

Further information about the course, as well as national and local governing documents for higher education, is available on the website of the University of Skövde.