

**SYLLABUS**

# **Predictive Analytics 7.5 credits D7056E**

**Prediktiv analys**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE  
2023-01-31**

# Predictive Analytics 7.5 credits D7056E

## Prediktiv analys

### Second cycle, D7056E

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	U G VG	Systemvetenskap	Informatics/Computer and Systems Sciences

### Main field of study

Information Systems Sciences, Mathematics

## Entry requirements

A minimum of 180 ECTS of university studies, out of which 60 ECTS in the areas of computer or system science. The studies shall have included Introductory Programming (for example D0009E Introduction to Programming or D0007N Objectoriented programming) and Fundamentals of Databases (for example D0004N Database Systems I or D0018E Database Technology).

Good knowledge in English, equivalent to English 6.

## Selection

The selection is based on 30-285 credits

## Course Aim

The objective of the course is for the student to develop their knowledge and skills in Predictive Analytics. After passing the course, the student should be able to:

1. Explain and use the concepts in predictive analytics
2. Describe the business situations where & how predictive analytics would, or should, be used.
3. Explain how predictive analytics is used to address organizational needs
4. Evaluate a predictive analytics technique
5. Analyze and reflect on the relationship between its components, current and future
6. Plan & execute predictive analytics experiment

## Contents

The Predictive Analytics course is aimed at providing knowledge to the students on how to make prediction using machine learning techniques. While scientists are accustomed to make predictions based on consolidated and accepted theories, nowadays big data analytics is able to deliver predictions based on executing a sequence of data processing steps. The course explains both the analytics process as well as the techniques for making predictions. The course takes a broad predictive analytics project perspective, while identifying some of the key challenges faced, while making predictions. Selected techniques from the information-based and error-based prediction, time series, ANN and deep learning approaches will be studied in the course with supporting examples and use cases.

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures, labs, assignments, case studies and/or project work. During the course, the students work with individual tasks and/or group work. Some assignments or case studies in the course might contain work in contact with or about the industry. The student uses different methods and techniques, and it is important to choose the right method, technique or computer support for each task. Before and after the tasks are solved, there are lectures to present and discuss different solutions.

Teaching is in English and on the Internet for distance students or on campus for students living here. IT support: Learning management system, e-mail and phone. The learning management system is used for delivering course material, information and submissions. Knowledge is shared and created within the course through virtual meetings with teachers and other students for discussions, supervision, teamwork and seminars. For students on campus, there will be meetings on campus.

## 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.

The examination consists of a written exam and written individual and group assignments to evaluate students' abilities to explain and use prediction techniques and to solve business problems with predictive analysis.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Remarks

Technical Requirements: access to computer with administrative rights, web camera, microphone and Internet connection.

## Course offered by

Department of Computer Science, Electrical and Space Engineering

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Individual task	U G#	1.5	Mandatory	S21	
0003	Group-/Project work	U G#	2	Mandatory	S21	
0004	Written exam	U G VG	4	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 Robert Brännström, HUL at the Department of Computer Science, Electrical and Space Engineering 2023-01-31

## Syllabus established

by Jonny Johansson, HUL SRT 2020-02-21