

# COURSE DETAIL

## HIGH-DIMENSIONAL DATA ANALYSIS

**Country**

Sweden

**Host Institution**

Lund University

**Program(s)**

Lund University

**UCEAP Course Level**

Upper Division

**UCEAP Subject Area(s)**

Statistics Mathematics

**UCEAP Course Number**

164

**UCEAP Course Suffix****UCEAP Official Title**

HIGH-DIMENSIONAL DATA ANALYSIS

**UCEAP Transcript Title**

HIGH-DIM DATA ANA

**UCEAP Quarter Units**

6.00

**UCEAP Semester Units**

4.00

## Course Description

Many statistical models try to explain how one variable relates to others. In this course, how to analyze multiple variables simultaneously, multivariate analysis. Both how they depend upon other variables, but also how they depend upon each other. With the tremendous amount of data available nowadays, e.g. in genetics, it is often the case that the number of variables is far greater than the number of observations. This demands special techniques that are learned in this course. Course content includes matrices and multivariate normal distribution, singular value decomposition and its geometric interpretation, principal component analysis including its functional formulation, factor analysis, cluster analysis, prediction theory including prediction with high-dimensional predictors, penalized regression and prediction, sparse matrices, linear discriminant analysis, and large-scale inference.

### Language(s) of Instruction

English

### Host Institution Course Number

STAN53

### Host Institution Course Title

HIGH-DIMENSIONAL DATA ANALYSIS

### Host Institution Course Details

<https://www.lunduniversity.lu.se/lubas/i-uoh-lu-STAN53>

### Host Institution Campus

Lund

### Host Institution Faculty

Economics and Management

### Host Institution Degree

### Host Institution Department

**Course Last Reviewed**

2025-2026

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