

COURSE DETAIL

COMPUTATIONAL STATISTICS

Country

Denmark

Host Institution

University of Copenhagen

Program(s)

University of Copenhagen

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Statistics

UCEAP Course Number

142

UCEAP Course Suffix**UCEAP Official Title**

COMPUTATIONAL STATISTICS

UCEAP Transcript Title

COMPUTATIONAL STAT

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

This course covers the fundamental algorithms for statistical computations and R packages that implement some of these algorithms or are useful for developing novel implementations. It develops the ability to implement, test, debug, benchmark, profile and optimize statistical software; select appropriate numerical algorithms for statistical computations; and evaluate implementations in terms of correctness, robustness, accuracy and memory, and speed efficiency. Topics include: maximum-likelihood and numerical optimization; the EM-algorithm; Stochastic optimization algorithms; simulation algorithms and Monte Carlo methods; nonparametric density estimation; bivariate smoothing; numerical linear algebra in statistics, sparse and structured matrices; practical implementation of statistical computations and algorithms; R/C++ and RStudio statistical software development.

Language(s) of Instruction

English

Host Institution Course Number

NMAK16005U

Host Institution Course Title

COMPUTATIONAL STATISTICS

Host Institution Course Details

<https://kurser.ku.dk/course/nmak16005u/2025-2026>

Host Institution Campus

Host Institution Faculty

Science

Host Institution Degree

Master

Host Institution Department

Mathematical Sciences

Course Last Reviewed

2025-2026

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