

# COURSE DETAIL

## MATHEMATICAL STATISTICS: STATIONARY STOCHASTIC PROCESSES

**Country**

Sweden

**Host Institution**

Lund University

**Program(s)**

Lund University

**UCEAP Course Level**

Upper Division

**UCEAP Subject Area(s)**

Statistics Mathematics Engineering

**UCEAP Course Number**

110

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

MATHEMATICAL STATISTICS: STATIONARY STOCHASTIC PROCESSES

**UCEAP Transcript Title**

STATIONRY STOCHASTC

**UCEAP Quarter Units**

6.00

**UCEAP Semester Units**

4.00

## Course Description

Stochastic processes find applications in a wide variety of fields and offer a refined and powerful framework to examine and analyze time series. This course presents the basics for the treatment of stochastic signals and time series. Topics covered include models for stochastic dependence; concepts of description of stationary stochastic processes in the time domain including expectation, covariance, and cross-covariance functions; concepts of description of stationary stochastic processes in the frequency domain including effect spectrum and cross-spectrum; Gaussian process, Wiener process, white noise, and Gaussian fields in time and space; Stochastic processes in linear filters including relationships between in- and out-signals, autoregression and moving average (AR, MA, ARMA), and derivation and integration of stochastic processes; the basics in statistical signal processing, estimation of expectations, covariance function, and spectrum; and application of linear filters: frequency analysis and optimal filters.

### Language(s) of Instruction

English

### Host Institution Course Number

FMSF10/MASC14

### Host Institution Course Title

MATHEMATICAL STATISTICS: STATIONARY STOCHASTIC PROCESSES

### Host Institution Course Details

<https://www.lunduniversity.lu.se/lubas/i-uoh-lu-MASC14>

### Host Institution Campus

Lund

### Host Institution Faculty

Engineering/Science

### Host Institution Degree

**Host Institution Department**

**Course Last Reviewed**

2023-2024

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