Department of Mathematics (incl. Math. Statistics)

Stockholm University

Syllabus

for course at first level

Stochastic Processes and Simulation II
Stokastiska processer och simulering II

7.5 Higher Education Credits
7.5 ECTS credits

Course code:	MT5012
Valid from:	Autumn 2017
Date of approval:	2017-08-18
Department	Department of Mathematics (incl. Math. Statistics)
Subject	Mathematical Statistics
Specialisation:	G2F - First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of Faculty of Science at Stockholm University 2017-08-18.

Prerequisites and special admittance requirements

To qualify for the course, knowledge equivalent to Mathematics I, 30 hp (MM2001), Mathematics II - Analysis, Part A, 7,5 hp (MM5010), Mathematics II - Linear Algebra, 7,5 hp (MM5012), Probability Theory I, 7,5 hp (MT3001), Statistical Analysis 7,5 hp (MT4001), Stochastic Processes and Simulation I, 7,5 hp (MT4002), Probability Theory II, 7,5 hp (MT5002), and Programming Techniques for Mathematicians, 7,5 hp (DA2004) is required.

Course structure

Examination code	Name	Higher Education Credits
TENT	Theory	6
LABO	Computer exercises	1.5

Course content

a. The course covers renewal theory, queueing models, Brownian motion, some material about stationary processes in continuous time and methods of stochastic simulation.

b. The course consists of the following two parts: Theory 6 hp and Computer exercises 1,5 hp.

Learning outcomes

After completion of the course, the student is expected to be able to:
Part 1, Theory, 6 hp:
- define advanced concepts in the theory of stochastic processes
- solve advanced problems on stochastic processes
- give written presentations of studies involving stochastic simulation.
Part 2, Computer exercises, 1,5 hp:
- carry out stochastic simulation using mathematical computer programs.

Education

Instruction is given in the form of lectures, exercises and computer based assignments.

Forms of examination

a. The course is examined in the following manner: measurement of knowledge takes place through written examination and written reports on computer exercises.

b. Grading is carried out according to a 7-point scale related to the learning objectives of the course:
A = Excellent
B = Very Good
C = Good
D = Satisfactory
E = Sufficient
Fx = Fail (some more work is required)
F = Fail (a lot more work is required)

c. Grading criteria for the course will be distributed at the start of the course.

d. A minimum grade E is required to pass the course.

e. Students who fail to achieve a pass grade in an ordinary examination have the right to take at least further four examinations, as long as the course is given. The term "examination" here is used to denote also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on two occasions have the right to request that a different teacher be appointed to set the grade of the course. A request for such appointment must be sent to the departmental board.

f. An opportunity to make up from grade Fx to the grade E is given. The examiner decides which assignments should be carried out to make up and the criteria for passing said assignments. The making up must take place before the next examination.

Interim

Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three occasions during a two-year-period after the end of giving the course. A request for such examination must be sent to the departmental board.

Limitations

The course may not be included in a degree together with the course Stochastic Processes and Simulation II (MT5004).

Misc

The course can be taken within the Bachelor's Programme in Mathematics, Bachelor's Programme in Mathematics and Economics, and it can also be taken as an individual course.

Required reading

Course literature is decided by the department board and it is published on the web site of the Department of Mathematics (www.math.su.se) at the latest 2 months before course start.