Syllabus

for course at first level

The Mathematics and Statistics of Infectious Disease Outbreaks	**7.5 Higher Education**
Matematiska och statistiska metoder för spridning av smittsamma	**Credits**
sjukdomar	**7.5 ECTS credits**

Course code:	MT3002
Valid from:	Summer 2020
Date of approval:	2020-04-22
Department	Department of Mathematics (incl. Math. Statistics)
Main field:	Mathematical Statistics
Specialisation:	G1F - First cycle, has less than 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 2020-04-22.

Prerequisites and special admittance requirements

To qualify for the course, knowledge equivalent to Mathematics I, 30 hp (MM2001), Programming techniques for mathematicians, 7,5 hp (DA2004), and English B/English 6 or the equivalent, is required.

Course structure

Examination code	Name	Higher Education Credits
THEO	Theory	3.5
PROJ	Project	4

Course content

The course consists of the following parts.

Theory (THEO) 3.5 hp:
- basic models for the spread of epidemics and their properties,
- statistical methods of estimating parameters.

Project (PROJ) 4 hp:
- simulation methods for more complicated models of epidemic spread,
- methods for drawing conclusions from observations of an ongoing outbreak, for instance predicting the course of the epidemic.

Learning outcomes

Upon completion of the course, the student is expected to be able to:

For Part 1, Theory, 3.5 hp:
- describe basic concepts and properties of models of epidemic spread,
- describe estimation principles for models of epidemic spread.

For Part 2, Project 4 hp:
- write a program for simulating models of epidemic spread and interpreting the results,

- analyze data using a simple model of epidemic spread and derive parameter estimates,
- predict the course of an epidemic outbreak, with or without preventive measures, by means of simulations.

Education

- This is an online course.
- Instruction is given in the form of web-based lectures, and supervision of individual project work.
- The language of the course is notified on each occasion at the online educational catalogue.

Forms of examination

a. The course is examined in the following manner: Theory: measurement of knowledge is carried out through a written home exam. Project: measurement of knowledge is carried out through hand-in assignments. In case of a delayed hand-in, these assignments will not be examined until the next written exam. The examiner is authorized to decide about alternative forms examination for students with disabilities. If teaching is in English the examiner is authorized to examine in English as well.

b. The course has no mandatory teaching.

c. 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)

In order to pass, a grade of at least E is required for both parts of the course, each of which is graded A-F. The final grade combines the grades of the two parts of the course, weighted according to their numbers of credits.

d. Grading criteria for the course will be distributed at course start.

e. Students who fail an ordinary examination are entitled to take additional examinations as long as the course is offered. There is no restriction on the number of examinations. The term "examination" here is used to denominate 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 a course, or on a part of a course, on two occasions have the right to request that a different teacher be appointed to grade the next exam, unless there are special reasons against it. A request for such an appointment must be sent to the departmental board. A course typically has three examinations for an academic year in which instruction is provided. Intervening years include at least one examination.

f. An opportunity to make up from grade Fx to grade E is given. The examiner decides which assignments should be carried out to make up and the criteria for passing said assignments. This 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 within a two-year-period after the end of the course offering. A request for such examination must be sent to the department board. This provision is also valid in the case of revision of the syllabus.

Misc

The course can be taken within the Bachelor Programmes in Mathematics, Mathematics and Economics and Mathematics and Computer Science. 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.