

# Syllabus

for course at advanced level

**Mathematical Economics**  
**Matematisk ekonomi**

**7.5 Higher Education**  
**Credits**  
**7.5 ECTS credits**

<b>Course code:</b>	MM7011
<b>Valid from:</b>	Autumn 2007
<b>Date of approval:</b>	2006-09-27
<b>Department</b>	Department of Mathematics (incl. Math. Statistics)
<b>Subject</b>	Mathematics/Applied Mathematics

## Decision

This syllabus was approved by the Board of the Faculty of Science at Stockholm University on 27 September 2006.

## Prerequisites and special admittance requirements

Admission to the course requires knowledge equivalent to 60 credits in mathematics, where Mathematical analysis III, 7.5 credits, and Linear algebra II, 7.5 credits, or equivalent, are included. Also required is knowledge equivalent to Probability Theory I, 7.5 credits. Swedish upper secondary course English B or equivalent.

## Course structure

Examination code	Name	Higher Education Credits
F711	Mathematical economy	7.5

## Course content

The course covers:

Ordinary differential equations, calculus of variation, Euler equations and generalizations in optimal control theory, stochastic processes such as the Wiener process, stochastic optimization problems such as option pricing. The contents of the course can be applied in modelling in a number of fields, for example in economics.

## Learning outcomes

After the course, students are expected to be able to:

- \* account for and prove basic theorems in mathematical economics
- \* explain and use methods in ordinary differential equations, calculus of variation and stochastic processes to solve applied problems in economics with and without the aid of a computer.

## Education

Instruction consists of lectures and exercises, compulsory computer-based homework and oral presentations.

## Forms of examination

a. The course is examined as follows: Knowledge assessment takes the form of written and/or oral examination.

b. Grades are assigned according to a seven-point goal-related grading scale:

A = Excellent  
B = Very good  
C = Good  
D = Satisfactory  
E = Sufficient  
Fx = Fail (more work required before credit can be awarded)  
F = Total fail

c. The grading criteria will be distributed at the beginning of the course.

d. To be awarded a pass, the minimum grade E is required, together with approved computer-based homework and oral presentations.

e. Students who fail an ordinary examination are entitled to sit additional examinations as long as the course is offered. There is no restriction on the number of examinations. Examinations also include other obligatory elements of the course. Students who have passed an examination may not resit it in order to achieve a higher grade. Students who have failed on two occasions are entitled to request the appointment of a different examiner for the next examination. Any such request must be made to the departmental board.

### **Interim**

Students may request that the examination be conducted in accordance with this course plan even after it has ceased to be valid. However, this may not take place more than three times over a two year period after course instruction has ended. Requests must be made to the departmental board.

### **Limitations**

The course may not be included in a degree together with the course Mathematical Economics (MA3260).

### **Misc**

The course can be a component of the Master's programmes in applied mathematics and in mathematics, but it can also be taken as an individual course.

### **Required reading**

Course literature is decided by the departmental board and described thereafter in an appendix to the course plan.