Department of Mathematics
(incl. Math. Statistics)

Stockholm University

Syllabus

for course at advanced level

Advanced Numerical Methods
Avancerade numeriska metoder

7.5 Higher Education Credits
7.5 ECTS credits

Course code:	BE7009
Valid from:	Autumn 2008
Date of approval:	2007-08-28
Department	Department of Mathematics (incl. Math. Statistics)
Subject	Mathematics
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University, August 28, 2007.

Prerequisites and special admittance requirements

For course admission knowledge equivalent to the following is required: Applied Numerical Methods, FL, 9 HECs (BE3007), English B/English 6 from Upper Secondary School level, is required.

Course structure

Examination code	Name	Higher Education Credits
THEO	Theory	4
LABO	Practical Exercises	3.5

Course content

a. The course covers Multipole methods. Krylov-type iteration methods for unsymmetric and nonlinear problems. Advanced topics in multigrid methods.

b. The course includes the following items:
• Theory, 4 HECs
• Practical Exercises, 3.5 HECs

Learning outcomes

After taking the course the student will be able to:
• understand construction principles of advanced numerical methods
• understand, use, and develop efficient algorithms for large scale problems

Education

The education consists of lectures and practical exercises.

Participation in practical exercises is compulsory. The examiner may rule that a student is not obliged to participate in certain compulsory education, if there are special grounds for this, after consultation with the relevant teacher.

Forms of examination

a. Examination for the course is in the following manner: measurement of knowledge of the item Theory takes place through written and/or oral examination.

b. Grading is carried out according to a 7-point scale related to learning objectives:
A = Excellent
B = Very Good
C = Good
D = Satisfactory
E = Sufficient
Fx = Fail
F = Fail

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

d. A minimum grade of E is required to pass the course, together with pass of the item Practical Exercises, and participation in all other compulsory education.

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.

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 Advanced Numerical Methods, Specialized Course (BT4020), or the equivalents.

Misc

The course is given as an individual course.

Required reading

Course literature is decided by the departmental board and is described in an appendix to the syllabus.