Faculty Board of Science

MMA110 Integration Theory

7.5 higher education credits

Second Cycle

This syllabus is the binding document.

1. Confirmation

The syllabus was confirmed by the Department of Mathematical Sciences on October 1, 2007 to be valid from October 1, 2007. Field of education: Science. Responsible department: Mathematical Sciences.

2. Position in the educational system

The course Integration Theory, 7.5 higher education credits, is one of several single subject courses included in the two-year Masters Program in Mathematical Sciences. The course is also open for eligible students outside the program. It is further one of the courses in the post-graduate program in Mathematics.

3. Entrance qualifications

The prerequisite for the course Integration Theory is the equivalent of 90 higher education credits in Mathematics.

4. Course content

The aim of the course is to give the basics of measure theory and integration theory. This includes measures and integration on abstract measure spaces as well as the construction of Lebesgue-Stieltjes measures on Euclidean space. Among the most important theorems covered are: Lebesgue's theorem on dominated convergence, Fubini's theorem, the Radon-Nikodym theorem, the formula for change of variables in multiple integrals, the Hardy-Littlewood maximal theorem and Lebesgue's theorem on differentiation of integrals.

5. Learning outcomes

After completing the course, the student will

- be familiar with the concepts of general measure spaces and the Lebesgue integral

- understand, and be able to apply, the theorems mentioned in the course content above

- be able to continue in advanced courses in mathematical analysis or probability theory.

6. Required reading

List of required reading enclosed.

7. Assessment

An examination will be given at the end of the course. A student who has failed a test twice has the right to change examiner, unless weighty arguments can be invoked. For this, the student must send a written request to the board of the department.

8. Grading scale

The grades are Fail (U), Pass (G), and High Pass (VG).

Students who are contractually entitled to ECTS grades should inform the examiner about this no later than one week after the start of the course.

Students without such entitlement will not be awarded ECTS grades. Grades will be converted into ECTS terminology according to a standard model approved by the University President.

9. Course evaluation

Oral and/or written course evaluation will be performed. The results of the evaluation will be communicated to the students and will serve as a guide for the development of the course.

10. Additional information

The language of instruction is English unless all involved are Swedish speakers.