SYLLABUS

Mathematics D 30 credits
M7014M

Matematik D

Course syllabus admitted: Autumn 2010 Sp 1 - Spring 2012 Sp 4

DECISION DATE
2010-02-19

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Mathematics D 30 credits M7014M

Matematik D

Second cycle, M7014M

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	U G VG	Matematik	Mathematics

Entry requirements

M0034M or corresponding courses. The D-essay can not be started until M0034M is passed.

Selection

The selection is based on 30-285 credits

Examiner

Thomas Gunnarsson

Course Aim

The course aims at broadening and deepening the students knowledge of mathematics and to develop the students ability to apply his or her knowledge.

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Contents

The course consists of a seminar part, a course part and a D-essay.
a. The seminar part, 2 p
Participation in the seminar part of the course in the history of mathematics.

b.Course part
The following courses each of which for 4 p
1. Geometry 4 p.
The course treats Euclidean geometry, projective geometry and differential geometry of curves and surfaces.
Literature: J Roe: Elementary geometry. Oxford University Press, 1993.

2. Computer algebra with Maple 4 p.
Maple is a mathematics program which supports symbolic manipulation. This means that one, besides numerical computations, curve and diagram plotting, can perform symbolic manipulations – differentiation, determination of primitive functions, solve equations, study differential equations,. So it can be left to the computer to do routine calculations, test hypotheses etc. Maple supports programming one can use ones own or other's programs and one can define new functions in Maple. The teaching is mostly in the form of laborations.
Literature: D Redfern: The Maple V handbook release 4 (or later), Springer Verlag 1999.
André Heck: Introduction to Maple, Springer Verlag, latest edition. (3rd or later).

c. D-essay (examination work) 10 p
As an alternative a 20 p work can be chosen (C/D-essay). This is required for the master (magister) degree. As examination work for master one can also do a C-essay and a D-essay. If this option is chosen, the D-essay should be a continuation and deeper study of the theme in the C-essay.

The work with the essay should be a deeper study of some part of mathematics. The course contains the planning, the working with and the presentation of an independent work. The work with the essay is supervised and can in some cases be connected with internal or external research projects at the department. Before the work with the essay can begin, MAM603 or corresponding courses must be passed. The essay shall be presented at a seminar. As an alternative on may also study a combination of the courses mentioned above and the following courses of 5 p each.

3. Theory of integration
4. Theory of distributions
5. Functional analysis
These courses are usually only offered as reading courses.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
The teaching consists mainly of seminars, lectures, laborations and supervision.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Written examination for each subcourse except for the Computer algebra course, where the examination is at the computer (and combined with handin problems and a project). The examination work (essay) I presented as a written report and this is presented at a public seminar.

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Remarks

Students are urged to contact the department for further information about which courses are offered a specific semester. Ususally the courses Geometry, Computer algebra and the History of mathematics courses are the ones that are offered.

Overlap

The course M7014M is equal to M7016M, MAM604

Literature. Valid from Autumn 2007 Sp 1

Roe, John: Elementary Geometry, Oxford University Press (senaste upplagan)
Redfern, Darren: The Maple Handbook, Springer-Verlag. (senaste upplagan)
Heck, André: Introduction to Maple, Springer-Verlag. (senaste upplagan)

Course offered by

Department of Engineering Sciences and Mathematics

Items/credits

Number	Type	Credits	Grade
0001	Seminar	3	U G VG
0002	Written exam (Geometry)	6	U G VG
0003	Written exam	6	U G VG
0004	Thesis	15	U G VG
0005	Project work	0	U G VG

Last revised

by 2010-02-19

Syllabus established

by Institutionen för matematik 2007-09-03

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