Syllabus for

Academic year 2009/2010 >

TMV181 - Calculus in one variable

Syllabus is not yet adopted
Owner: TKDES
7,5 Credits
Grading: TH - Five, Four, Three, Not passed
Education cycle: First-cycle
Major subject: Mathematics
Department: 11 - MATHEMATICAL SCIENCES

Teaching language: Swedish

Credit distribution

Course module	Sp1	Sp2	Sp3	Sp4	Summer course	Examination dates
0107 Examination 7,5 c Grading: TH		7,5 c				Sat 19/12-2009 am V, Fri 09/04-2010 am V, Fri 27/08-2010 am V

In programs
TKDES INDUSTRIAL DESIGN ENGINEERING, Year 1 (compulsory)

Examiner:
Professor Peter Hansbo

Replaces
TMV180 Calculus in one variable

Course evaluation:
https://document.chalmers.se/doc/1021651717

Go to course homepage

Eligibility:
For single subject courses within Chalmers programmes the same eligibility requirements apply, as to the programme(s) that the course is part of.

Course specific prerequisites
TMV176 or equal (including MATLAB).

Aim
The purpose of the course is to, together with the other math courses in the program, provide a general knowledge in the mathematics required in further studies as well as in the future professional career.

Learning outcomes *(after completion of the course the student should be able to)*
- have deepened knowledge of elementary functions.

- have attained good knowledge about the integral and its relation to differentiation.

- be acquainted to both analytical and numerical methods for calculating integrals.

- have a good understanding of the meaning of an ordinary differential equation.

- be familiar with both analytical and numerical methods for solving ordinary differential equations.

- be familiar with how functions can be approximated by polynomials and represented by power series.

- be able to use and combine different concepts in problem solving.

- be able to use the software MATLAB in problem solving.

Content
Antiderivatives and integrals, methods of integration.

Improper integrals.
Applications of integration: Area, volume, centre of mass, arc length, area and volume of solids of revolution
Numerical integration: the trapezoid rule, Simpson's rule.

Taylor's formula, series and power series.

Theory of algebraic equations with complex coefficients.

Ordinary differential equations: First-order equation in general, analytical solution of separable and linear equations. Second-order linear equations with constant coefficients, the equations of simple and damped harmonic motion. Higher-order linear equations with constant coefficients. Change of variables in ordinary differential equations.

Organisation

Instruction is given in lectures and classes. More detailed information will be given on the course web page before start of the course.

Literature

Literature will be announced on the course web page before start of the course.

Examination

More detailed information of the examination will be given on the course web page before start of the course.
Examples of assessments are:
-selected exercises are to be presented to the teacher orally or in writing during the course,
-other documentation of how the student's knowledge develops,
-project work, individually or in group,
-written or oral exam during and/or at the end of the course.
-problems/exercises are to be solved with a computer and presented in writing and/or at the computer.