



Faculty of Technology and Science
Mathematics

Syllabus

Course Approval

The syllabus was approved by the Faculty Board of Technology and Science on 19 April 2007, and is valid from the Autumn semester of 2007 at Karlstad University.

Course Code: MAGA09

**Introduction to Mathematics, 7.5 ECTS Credits
(Inledande matematik, 7.5 Swedish credit points)**

Degree Level: Bachelor

Progression Level: A

Language of Instruction

The language of instruction is Swedish.

Prerequisites

Upper secondary school Mathematics C.

Major Field of Study

Mathematics

Aims

The aim of this course is to consolidate and develop the mathematical skills acquired at upper secondary school C level. In addition, the student is expected to acquire and develop the mathematical skills taught at upper secondary school D level in science and technological programmes.

After completion of the course the student should be able to

- perform algebraic calculations in a reliable way
- use the unit circle to define trigonometrical concepts and prove trigonometrical relations, use formulas to transpose trigonometrical expressions, solve trigonometrical equations and draw graphs for trigonometrical functions.
- calculate sides and angles in triangles
- quote, explain and use the definition of the derivative
- recognize and use the different notations for first- and second derivatives
- differentiate products, quotients and composite functions
- carry out function investigations and determine extreme values and intervals for increasing and decreasing
- solve power, exponential and logarithm equations
- determine the antiderivative
- write down and use integrals in different applications, for example area calculations

Course Content

Algebraic calculation and handling of variables. Trigonometry. The function concept and the elementary functions. Derivatives, graph drawing and extreme values. Antiderivatives and integrals with applications.

Reading List

See separate document.

Examination

Examination is in the form of a written exam. The number of examination opportunities for passing the course is limited to three per academic year.

Grades

One of the grades U (Fail), G (Pass), or VG (Distinction) or one of the grades U (Fail), 3 (Pass), 4 (Pass not without distinction), or 5 (Pass with distinction) is awarded in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

The local regulations for undergraduate studies at Karlstad University stipulate the obligations and rights of students and staff.

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