



Faculty of Health, Science and Technology  
Mathematics

# Syllabus

## Mathematics Preparatory C

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|------------------------------------|---|
| <b>Course Code:</b>                | MABX33  |
| <b>Course Title:</b>               | Mathematics Preparatory C<br><i>Matematik Bas C</i> |
| <b>Credits:</b>                    | 7.5   |
| <b>Degree Level:</b>               | Preparatory   |
| <b>Progressive Specialisation:</b> | ()  |

**Major Field of Study:**

### Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2019-02-18, and is valid from the Autumn semester 2019 at Karlstad University.

### Prerequisites

Registered on Mathematics Preparatory A, 7.5 ECTS credits, and Mathematics Preparatory B, 7.5 ECTS credits, or equivalent

### Learning Outcomes

Upon completion of the course, students should be able to:

- define the concept of the derivative and calculate the derivative of certain elementary functions using that definition,
- deduce and use derivative rules for polynomial, power, exponential and logarithmic functions, compound functions, trigonometric functions, and the product and quotient of functions,
- explain the relationship between the graph of a function and its first and second derivative,
- use the derivative to solve maximisation and minimisation problems and to complete curve constructions,
- describe the basic properties of polynomial, power, and exponential functions, compound functions, logarithmic functions, and absolute value functions, as well as sketch graphs for them,

- identify antiderivatives and calculate basic integrals, and
- apply the concepts and methods covered in the course when solving problems.

**Content**

The course covers the following:

- change quotient and derivative,
- differentiation rules,
- study of functions using the derivative,
- curve construction and asymptotes,
- applications of the derivative, extreme value problems,
- antiderivatives and integrals.

**Reading List**

See separate document.

**Examination**

Assessment is based on an individual written exam. The number of examination opportunities is limited to three per academic year.

**Grades**

One of the grades Pass (G) or Fail (U) is awarded in the examination of the course. (Dnr RB C2018/824)

**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 evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

**Course Certificate**

A course certificate will be provided upon request.

**Additional information**

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