



Faculty of Technology and Science
Mathematics

Syllabus

Course Approval

The syllabus was approved by the Faculty Board of Technology and Science on 5 December 2012, and is valid from the Spring semester of 2013 at Karlstad University.

Course Code: MAGB65

Optimization, 4.5 ECTS Credits

(Optimering, 4.5 Swedish credit points)

Degree Level: Bachelor

Progressive Specialisation: G1F (First cycle, has less than 60 credits in first-cycle course/s as entry requirements)

Language of Instruction

Swedish or English

Prerequisites

Foundation Course in Mathematics, 7.5 ECTS cr, Calculus in one Variable, 7.5 ECTS cr, Calculus in several Variables, 7.5 ECTS cr, Linear Algebra and Vector Calculus, 7.5 ECTS cr, or equivalent.

Major Field of Study

MAA (Mathematics)

Learning Outcomes

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

- formulate optimization problems mathematically,
- determine if optimization problems are convex,
- solve LP-problems with the simplex algorithm and perform sensitivity analysis,
- formulate duals of LP-problems and apply duality theory to problem solving.

Content and Form of Instruction

Instruction is in the form of lectures and exercise sessions.

Content: The optimization process, model formulation, convexity theory, LP-problems (linear programming problems), two phase simplex algorithm, sensitivity analysis, duality theory, dual simplex algorithm, integer programming, network problems.

Reading List

See separate document.

Examination

Assessment is based on a written exam. The number of examination opportunities is limited to 3 per academic year.

Grades

One of the grades Fail (U), 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 studies at the Bachelor's and Master's levels at Karlstad University stipulate the obligations and rights of students and staff.

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