



Course syllabus

Faculty of Technology
Department of Mathematics

4MA421 Algebraiska strukturer II, 7,5 högskolepoäng
Algebraic structures II, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved 2014-10-03

Revised 2016-06-15 by Faculty of Technology.

The course syllabus is valid from autumn semester 2016

Prerequisites

60 credits including Algebraic structures I (2MA405) 7.5 credits or equivalent.

Objectives

After completing the course, the student should be able to

- independently and with adequate techniques solve problems, perform calculations, and conduct lines of reasoning within the part of mathematics that is covered by the course, and to clearly communicate these solutions, calculations, and reasonings in writing
- orally describe terminology and definitions, along with formulating, proving and analyzing theorems that are central to the course.

Content

Group Theory: The Isomorphism Theorems for Groups. Simple Groups. Solvable Groups. Finite Groups; The Fundamental Theorem of Finite Abelian Groups and Sylow's Theorems.

Ring Theory: The Isomorphism Theorems for Rings. Unique Factorization Domains. Principal Ideal Domains. Euclidian Domains. Rings of Quadratic Integers.

Field Theory: Field Extensions. Finite, Algebraic, Normal, and Separable Extensions. Finite Fields.

Type of Instruction

Lectures and seminars.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The student's knowledge is assessed in the form of a written exam and along with an oral theory examination.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

This course cannot be part of a degree in combination with another course in which the content fully or partly correspond to the content of this course: 4MA121 Algebraic structures II, 7.5 credits

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Beachy, John A. & Blair, William D. *Abstract Algebra*, 3rd Ed., Waveland Press, 2006 or later. 120 pages (484)