Linnæus University

Dnr: 2014/2419 -3.1.2

Course syllabus

Faculty of Technology

Department of Mathematics

4MA121 Algebraiska strukturer II, 7,5 högskolepoäng
4MA121 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 2009-08-11
Revised 2014-09-03 by Faculty of Technology. Prerequisites, objectives, content, examinations and type of instructions are revised.
The course syllabus is valid from autumn semester 2015

Prerequisites
60 credits including Algebraic structures I (2MA105) 7.5 credits or equivalent.

Objectives
After completing the course, the student should be able to:

- derive structural properties of finite groups of low order
- describe how the concept of unique factorization can be generalized from the ring of integers to general integral domains
- derive simple structural properties within the fundamental theory of field extensions
- solve problems using methods and the theory of abstract algebra.

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 Fail (U), Pass (G) or Pass with Distinction (VG).

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

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the
examiner before the grading process starts.

Course Evaluation
After the course a written evaluation of the course will take place according to the University guidelines.

Required Reading and Additional Study Material

Hungerford, Thomas W. *Abstract Algebra - An Introduction*, Brooks/Cole Cengage Learning, 2013 or later, 150 (552) pages.