Study programme(s): Mathematics

Level: doctoral studies

Course title: Lattice theory 2 (AL-09)

Lecturer: Branimir M. Šešelja

Status: optional

ECTS: 10

Requirements: none

Learning objectives

Acquiring knowledge in advanced topics of lattice theory and in application of these in mathematics and in other sciences.

Learning outcomes

Minimal: Getting familiar with some special topics in lattice theory and being able to apply these to typical problems.

Desirable: Individual use of special topics in lattice theory and creativity in solving advanced problems.

Syllabi

Selected topics in lattice theory:
Modular, semi-modular and geometric lattices. Matroids. Projective geometries.
Ortomodular lattices.
Continuous lattices. Complete distributivity. Irreducibility. Algebraic lattices. Scott topology.
Free lattices, free products, varieties of lattices.
Duality theory.
Formal concept analysis.

Literature

1. G. Gratzer, General Lattice Theory, Second edition, Birkhauser, 2003.
2. R. Freese, J. Jezek, J. B. Nation, Free lattices, Mathematical Surveys and Monographs, 42. American Mathematical Society, Providence, RI, 1995.
3. B. Ganter, R. Wille, Formal concept analysis, Springer, 1999.
4. G. Gierz, K.H. Hofmann, K.Keimel, J. D. Lawson, M. Mislove, D.S. Scott, A compendium of continuous lattices, Springer Verlag 1980.
5. D.M. Clark, B.A. Davey, Natural dualities for the working algebraist, Cambridge studies in advanced mathematics, 57, 1998.

Weekly teaching load				Other: 0
Lectures: 2	Exercises 0	Other forms of teaching: 0	Student research: **6**	

Teaching methodology

Theoretical lessons with examples; permanent interaction and communication with students.

Grading method (maximal number of points 100)

Pre-exam obligations	**points**	**Final exam**	**points**
Colloquia	50	Written exam	50