Study programme(s): Mathematics (MD)

Level: Ph.D.

Course title: Semigroup Theory 2 (AL-11)

Lecturer: Igor V. Dolinka

Status: elective

ECTS: 10

Requirements: Semigroup Theory 1

Learning objectives

Introduction of the advanced concepts, results and techniques of semigroup theory.

Learning outcomes

Upon completion of the course, the student should master the advanced methods and notions which enable research work in the field of semigroup theory (with emphasis on universal-algebraic and combinatorial problems).

Syllabus

Depending on the choice of the candidate, this advanced course can take one of many forms, thus it may focus on one of the following sub-areas:

- Varieties of semigroups and finite basis problems; applications of combinatorics on words.
- Advanced theory of inverse semigroups
- Theory of finite semigroups and psudovarieties; applications in automata theory.
- Combinatorial semigroup theory.

Literature

1. G.Lallement, *Semigroups and Combinatorial Applications*, Wiley, 1979.
2. J.Almeida, *Finite Semigroups and Universal Algebra*, World Scientific, 1994.
3. M.V.Sapir, *Combinatorics on Words with Applications*, LITP, Paris, 1995.
4. O.G.Kharlampovich, M.V.Sapir, *Algorithmic problems in varieties*, Internat. J. Algebra Comput. **5** (1995), 379-602.
5. M.V.Lawson, *Inverse semigroups: The Theory of Partial Symmetries*,, World Scientific, Singapore, 1998.
6. N. Ruskuc, *Semigroup Presentations*, PhD thesis, University of St Andrews, 1995.
7. M.V. Volkov, *The finite basis problem for finite semigroups*, Math. Japonica **53** (2001), 171-199.

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

Teaching methodology

Lectures, with active participation of the students, discussion, etc.

Grading method (maximal number of points 100)

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