Study program: Mathematics (Ph.D. program)

Course: Set Theory 2

Course instructor(s): Miloš Kurilić

Course type (compulsory/elective): elective

Credit points: 10 ECTS

Prerequisites: -

Course objectives:

Studying the techniques of building models of set theory (inner models, forcing).

Learning outcomes:

Minimal:

Understanding of the studied parts of the set theory through reproduction of its main results.

Desirable:

Deeper understanding of the theory, through more sophisticated examples, applications and connections to other braches of mathematics.

Course description (outline):

Suslin's problem. Trees. The principles of diamond and diamond-plus. Transitive models of the set theory. Relativization and absoluteness. Contructible sets, the consistency of ZFC + GCH. The hierarchy of classes, relations and functions. Complete Boolean algebras. Boolean-valued models. Generic extensions. Forcing. Independence of CH and AC. Forcing and infinite combinatorics (applications of forcing). The problem of measure, measurable cardinals. Ultrapowers and elementary embeddings. Silver's indiscernibles. The model L[U].

References:

1. Thomas Jech, Set Theory, Springer, 1997.
2. Kenneth Kunen, Set Theory: an Introduction to Independence Proofs, North-Holland, 1980.
3. Frank R. Drake: Set Theory: an Introduction to Large Cardinals, North-Holland, 1974.

Active teaching hours	**Theoretical classes:** 2	**Practice classes:** -6

Methods of teaching:

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

Grading structure

Pre-exam obligations	**Points**	**Exam**	**Points**
Colloquia	**50**	Oral exam	**50**
Seminars			