Level: bachelor

Course title: Nonstandard Mathematical Problems (M4-25)

Status: obligatory

ECTS: 5

Requirements: none

Learning objectives

Practising particular methodical procedures in presentation of the topics selected in teaching mathematics.

Learning outcomes

Minimal

Ability to understand basic problem types and their methodical transformations.

Desirable

Students should be able to apply the obtained knowledge and skills in additional work, such as preparations of talented pupils for mathematical competitions.

Syllabus

Theoretical instruction

Nonstandard problems of Euclidean geometry in plane and in space. Geometrical inequalities and extremal problems in geometry. Selected problems of combinatorial geometry. Inequalities. Mean inequalities and the Jensen inequality. Extreme values of functions and applications. Sequences and recurrent relations. Selected nonstandard problems in graph theory. Combinatorial games and games on graphs. Logical-combinatorial problems.

Practical instruction

Perfecting methodical procedures by applying the contents of theoretical part of the course in teaching practice.

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