Level: bachelor

Course title: Mathematical physics

Status: elective

ECTS: 6

Requirements: Mathematics and Fundamentals of mathematical physics

Learning objectives

Introduction to some specific mathematical methods and their application in physics.

Learning outcomes

After taking the course, students should have developed:

General abilities: basic knowledge of this field, following the literature, analysis of various solutions and the choice of the most adequate solution, application in practice and other subjects.

Subject-specific abilities: formulation of partial differential equations in three dimensions and their analytical solving and formulating the approach to their numerical solving; performing the integral transformations and their application in solving the differential equations; application of the group theory methods to the solution of various problems in physics.

Syllabus

Theoretical instruction

Vector analysis, various types of fields. Partial differential equations of mathematical physics. Problem formulation and solution methods. Integral transformations and their application to solving partial differential equations. Integral equations. Elements of group theory. Linear representations.

Practical instruction

Problem solving, homework.

Weekly teaching load				Other:
Lectures: 3	Exercises: 1	Other forms of teaching: 1	Student research:	