

Level: bachelor				
Course title: Fundamentals of mathematical physics				
Status: obligatory				
ECTS: 6				
Requirements: Mathematics I and II, Mechanics, Thermodynamics				
Learning objectives Students obtain the basis of the mathematical formalism necessary for understanding the theoretical physics courses.				
Learning outcomes After finishing the course, student should have developed: General abilities: basic knowledge from this field, following the literature; analysis of various solutions and the choice of the most adequate solution, better understanding of the mathematical methods, application in other fields, creativity. Subject-specific abilities: knowledge of vectors and vector field calculations; the application of Fourier analysis; operator calculations, solving the eigen-problem of operators and tensors; knowledge of the basic properties of Schroedinger equations and exactly soluble cases.				
Syllabus <i>Theoretical instruction</i> Vector algebra, vector analysis, generalized coordinates. Application of ordinary differential equations to physics, Fourier analysis. Operators, matrices and tensors: definition, properties, eigenvalue problem. Mathematical formalism of quantum mechanics. <i>Practical instruction</i> Problem solving.				
Weekly teaching load				Other:
Lectures: 3	Exercises: 2	Other forms of teaching: 0	Student research: 0	