

<b>Study programme(s):</b> Applied Mathematics (MB)				
<b>Level:</b> master				
<b>Course title:</b> Gravity theory (ФДОИ40И12)				
<b>Status:</b> elective				
<b>ECTS:</b> 6				
<b>Requirements:</b> Theory of relativity, Geometry, Fundamentals of mathematical physics				
<b>Learning objectives</b> Introduction to foundations of Einstein's theory of gravity. Providing the basic knowledge in general tensor calculus in Riemann spaces, relation between gravitation and geometry. Sequential introduction of Riemann, Ricci and Einstein tensor. Derivation of Einstein's equations. Familiarity with applications and experimental verifications of this theory.				
<b>Learning outcomes</b> After taking the course, the student should have developed: <b>General capabilities:</b> 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. <b>Subject-specific capabilities:</b> mastering the elements of tensor calculus; understanding of the basic principles of Einstein's theory of the gravitational field; independent formulation and solution of Einstein's equations for a particular problems; application of knowledge in higher courses.				
<b>Syllabus</b> <i>Theoretical instruction</i>  Basics of Einstein's theory of gravity. Tensor calculation in Riemann space, basics of general theory of relativity, connection between gravity and geometry. Riemann, Ricci and Einstein tensor. Derivation of Einstein equations. Experimental confirmation of the theory of gravity.  <i>Practical instruction</i> Problem solving, homework.				
<b>Weekly teaching load</b>				Other:
Lectures: 3	Exercises: 2	Other forms of teaching:	Student research:	