

Study program: Mechanical engineering			
Type and level of studies: Master studies			
Course unit: Testing of Railway Vehicles			
Teacher in charge: Prof. Dr Dragan Petrović			
Language of instruction: English			
ECTS: 6			
Prerequisites: None			
Semester: Winter			
Course unit objective: Acquiring a higher level of knowledge in the field of experimental testing of railway vehicles and their structural units according to international standards and regulations.			
Learning outcomes of the course unit: Ability to understand and solve typical engineering problems in the field of experimental testing of railway vehicles and their structural units according to international standards and regulations.			
Course unit contents			
<i>Theoretical classes</i> Introduction to testing of railway vehicles. International regulations in the design and testing of railway vehicles. Criteria for assessment the quality of railway vehicles. Problem analysis and definition of program of testing. Preparation and organization of tests. Performing tests. Measuring equipment for testing of railway vehicles. Design of special transducers for testing railway vehicles and their structural units. Types of testing of railway vehicles. Static tests. Dynamic tests. Testing of quiet running and running safety. Fatigue tests and determination of lifespan. Tests in exploitation. Analysis and processing of test results. Final report. Modern techniques for monitoring the condition of railway vehicles and their important structural units. Examples of testing of railway vehicles.			
<i>Practical classes</i> Overview and characteristics of measuring equipment and transducers for testing of railway vehicles and their structural units. Examples of testing of railway vehicles. Laboratory and practical work in the Laboratory for railway engineering and structural testing. Term paper on a given topic of specific testing of a railway vehicle or its part (assembly, sub-assembly or element).			
Literature UIC, EN and TSI regulations. E. Andersson, M. Berg, S. Stichel, Rail Vehicle Dynamics, Railway Group KTH, Stockholm, 2007. S.D. Iwnicki, Handbook of Railway Vehicle Dynamics, CRC Press, Taylor & Francis Group, Boca Raton, 2006.			
Number of active teaching hours			Other classes
Lectures: 3	Practice: 1	Other forms of classes: 1	
Teaching methods Theoretical classes in the form of lectures. Practical teaching. Classroom exercises. Laboratory exercises in the Laboratory for Railway engineering and structural testing. Term paper.			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	10	oral examination	50
practical classes/tests		written examination	
Seminars/homework	30	
Project	10		
Other			
Grading system			
Grade	No. of points	Description	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	
6	51-60	Passing	

5	Less than 51	Failing
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