

Study program: Mechanical engineering			
Type and level of studies: Master studies			
Course unit: Designing and Development of Railway Vehicles			
Teacher in charge: prof. dr. Dragan Petrović			
Language of instruction: English			
ECTS: 6			
Prerequisites: None			
Semester: Autumn			
Course unit objective: Gaining of higher level of knowledge in the field of modern methods of design and development of railway vehicles and their structural parts.			
Learning outcomes of the course unit: Training for application of modern methods and advanced techniques in solving a wide range of engineering problems in the field of design and development of railway vehicles and their structural parts.			
Course unit contents			
<i>Theoretical classes</i>			
Introduction to the design and development of railway vehicles. Characteristics of modern railway vehicles. Criteria for assessing the quality of railway vehicles and their structural parts. Problems of design and development of railway vehicles and their structural parts. Modern methods of design and development of railway vehicles. Design and development of railway vehicles from the point of static, quasistatic and dynamic characteristics. Using of application software in the design and development of railway vehicles and their structural parts. Using of commercial software packages for designing, developing, and defining of technical documentation for railway vehicles and their structural parts. Experimental tests in the verification and development of railway vehicles.			
<i>Practical classes</i>			
Examples of modelling, calculation and preparation of technical documentation of elements, sub-assemblies and assemblies of railway vehicles in specialized software packages. Laboratory and practical work. The Project of the specific type of railway vehicle.			
Literature			
M. Spiryagin, V. Autores, C.R. Cole, Y.Q. Sun, M.J. Mcclanachan, V. Spiryagin, Design and Simulation of Rail Vehicles, Taylor & Francis Group, 2014.			
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: 2	Practice: 2	Other forms of classes: 1	
Teaching methods: Theoretical classes in the form of lectures. Practical classes. Auditory and laboratory exercises. Project task.			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	5	oral examination	50
practical classes/tests	10	written examination	
Seminars/homework		
Project	35		
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 50	Failing	