

Study program / course: Mechanical Engineering			
Type and level of study: Master academic studies			
Course: Virtual Design of Vehicles			
Lecturers: Radonjić R. Rajko			
Status of course: Obligatory for module M₃, II semester			
Number of ECTS:6			
Precondition: none			
The objective of course Basic objective is obtainment of necessary knowledge about modern methods for design of vehicles' systems and their advantages related to convectional ways of design.			
The outcome of course is ability of students to: <ul style="list-style-type: none"> - get knowledge about preparation steps and necessary know-how for successful application of modern methods for design of vehicle' systems, - introduce the most frequently applied software for virtual design and research in automotive industry, - understand importance of virtual reality during production of new and/or improvement of existing product, as well as prediction of life-time of vehicle's systems and vehicle itself. 			
Syllabus <i>Theoretical study</i> Basic elements of virtual environment (virtual reality). Importance of CAD technologies in conception phase of vehicle design. Design based on mathematical modeling of vehicle's systems. Analysis of ergonomic demands in virtual environment. Simulation of environment (road and off-road), traffic flows. Analysis of interaction between driver-vehicle-environment. Influence of virtual design to shortcut of necessary time for development of new model, minimization of development costs and optimization of vehicle performances according to classical methods. Simulation of driving in virtual environment. <i>Practical Studies: Exercise</i> Independently making of seminar papers and introducing with software in field of vehicle's design.			
Recommended reading <ol style="list-style-type: none"> 1. Janičijević N., Janković D., Todorović J.: Konstrukcija motornih vozila, Mašinski fakultet, Beograd, 1987. 2. Radonjić R., Glišović J.: Virtualno konstruisanje vozila, Script 2008. (Preparation), Mašinski fakultet, Kragujevac 3. Simić D.: Motorna vozila, Naučna knjiga, Beograd, 1988. 			
Supplemental reading <ol style="list-style-type: none"> 1. Plantenberg, K.: Introduction to Catia V5 [Release 12] A Hands-On Tutorial Approach, Detroit Mercy: Schroff Development Corporation, 2004. 2. Cozzens, R., CATIA V5 Workbook : releases 14 & 15 : CAD/CAM Engineering & Technology, Cedar City, Utah : SDC, cop., 2005. 			
The number of hours of active teaching:			Other classes:
Theory: 2	Practical classes:1.6	Other forms of teaching: 0.4	Research study:0 1
Methods of teaching Lectures will be done with usage of multimedia tools wherewith will be archived active participation of students. During audio exercises students will be introduced with software in virtual design field, making and discussion of seminar papers. Knowledge testing will be done by one independently done seminar paper and two colloquiums. Oral finishing examination is anticipated.			
Evaluation of knowledge			
Pre-final exam obligations	points	Final exam	points
Activities during the classes:	10	oral examination	30
Practical classes:	20		
Colloquiums(s) :	20+20		
Seminar(s) :			