

Study program / course: Mechanical engineering			
Type and level of study: Bachelor academic studies			
Course: Motor vehicles 1			
Lecturers: Lukic K. Jovanka, Demic D. Miroslav			
Status of course: Obligatory, joint for modules M₃ and M₈, V semester			
Number of ECTS: 6			
Precondition: None			
The objective of course			
Obtain technical understanding of complex condition which should be achieved by vehicles with respect to environment, safety, comfort, economy and efficiency			
The outcome of course			
Upon successful completion of this course, student will:			
<ul style="list-style-type: none"> - know key factors of performance, steer ability, stability and general vehicle concept driven by wheels, - be able to determine basic parameters of key factors and - know fundamental vehicle assemblies and subassemblies, working principles and application on vehicles 			
Syllabus			
Theoretical study			
Introduction – historical development of vehicles, Basics terms and values, Vehicles classification, Vehicles concepts, basic assemblies of vehicle, Wheel, Basic vehicles parameters and dimensions, General rolling case, Special rolling cases, Rolling resistance coefficient, Adhesion Coefficient, Slipping, Adhesion circle, Rolling of laterally rigid wheel, Rolling of laterally elastic wheel, Laterally wheel characteristics, Weight distribution, Position of centre of gravity, Moving resistance (air, rolling, inertial, gradient), Dynamics reactions, Boundary conditions, Prime mover performance, Transmissions efficiency coefficient, Traction equation, Power equation, Dynamics factor, Vehicle performances, Gear ratios, Braking, Theoretical background, Braking forces distribution, Braking stability, Braking efficiency parameters, Vehicle stability: Longitudinal and lateral, Vehicle cornering			
Practical classes			
<i>Laboratory exercise</i>			
<ul style="list-style-type: none"> - Drivetrain (elements, assemblies, subassemblies) – Basic constructive solutions, working principles, Application in vehicles - Braking system, Working principle, Braking system elements, Constructive solutions - Vehicle suspension system, Elements, Typical constructive solutions - Steering system, Elements, working principles, Classifications 			
<i>Auditory exercise</i>			
<ul style="list-style-type: none"> - Moving resistance, Dynamics reactions, Weight distribution, - Vehicle performance: Tractive – speed characteristics, Power equation, Tractive equation, Performance assessment parameters - Braking parameters (length and time of braking) - Vehicle stability, Stability assessment parameters 			
Recommended reading			
[1] Simić D.: Motorna vozila, Naučna knjiga, Beograd, 1988.			
[2] Demić M.: Teorija kretanja motornih vozila, Tehnički fakultet Čačak, 1999			
[3] Lukić J.: Motorna vozila, Metodička zbirka zadataka, Mašinski fakultet u Kragujevcu, 2006			
The number of hours of active teaching:			Other classes:
Theory: 3	Practical classes: 1.5	Other forms of teaching: 0.5	Research study:
Methods of teaching			
Lectures, Practical exercises, Laboratory exercises			
Evaluation of knowledge			

Pre-final exam obligations	points	Final exam	points
Activities during the classes:	5	Oral exam	30
Practical classes:			
Colloquiums(s) :	(2*20+1*15)=55		
Assignments	(2*5) 10		