

Add. 3		Course program for the first, second and third level (cycle) of studies			
1.	Course title	Vehicle dynamics simulation			
2.	Code	289			
3.	Study group(s)	MV			
4.	The organizer of the study programme (unit, institute, department)	Faculty of Mechanical Engineering - Skopje, Ss. Cyril and Methodius University in Skopje			
5.	Level (first, second, third)	First			
6.	Academic year / semester	IV / VII (winter)	7.	ECTS credits	6
8.	Instructor	Dr. Igor Gjurkov, associate professor			
9.	Prerequisites	Theory of motion of motor vehicles Design of motor vehicles			
10.	Course objectives (competences): Modeling and simulation of fundamental mathematical models and complex 3D virtual mechanical models for vertical and horizontal vehicle dynamics investigations. Analysis and evaluation of automotive ride, comfort, handling and stability using vehicle models.				
11.	Course content: Introduction of the modeling and simulation method for horizontal and vertical vehicle dynamics studies. Vertical dynamics (quarter-car 1D model, half-car 2D model), mathematical modeling and simulation. Criteria for ride, comfort and stability evaluation. Horizontal dynamics (single-track bicycle model, 3D virtual model), mathematical and MBS modeling and simulation. International ISO standards in the vehicle horizontal dynamics field. Criteria for handling and stability evaluation.				
12.	Study methods: lectures, exercises / lab, project, self study				
13.	Total hours	6 ECTS x 30 hours = 180 hours			
14.	Hours allocation per activity:	30 + 30 + 40 + 20 + 60 = 180 hours			
15.	Lectures/Lab	15.1.	Lectures	30 hours	
		15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments	16.1.	Project assignments	40 hours	
		16.2.	Individual assignments	20 hours	
		16.3.	Self-study	60 hours	
17.	Points/Marks:				
	17.1.	Tests			60
	17.2.	Projects			35
	17.3.	Attendance			5
18.	Grading scale	Under 50		5 (five) (F)	
		51 - 60 points		6 (six) (E)	
		61 - 70 points		7 (seven) (D)	
		71 - 80 points		8 (eight) (C)	
		81 - 90 points		9 (nine) (B)	
		91 - 100 points		10 (ten) (A)	
19.	Prerequisites for taking the final exam	completed activity 16.1			
20.	Language of Instruction	Macedonian			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				
	22.1.	Instruction materials			
		No.	Author	Title	Publisher
	1.	Igor Gjurkov	Vehicle dynamics simulation: horizontal dynamics (in	Internal edition, MFS.	2010

				Macedonian)		
		2.	J. Wong	Theory of ground vehicles (translated in Macedonian)	Ars-lamina, Skopje	2010
		3.	R. Rajamani	Vehicle dynamics and control	Springer, New York	2006
	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	Masato Abe	Vehicle handling dynamics	Elsevier, Oxford	2009