

MM 427 Automotive Engineering I				DEPARTMENT OF MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project /Field Study	Homework	Other	Total	Credit	ECTS Credit
7	42	0	-			33	75	3	3.0
Language	Turkish								
Compulsory / Elective	Elective								
Prerequisites	None								
Course Contents	Vehicle configurations, design considerations. Basic tyre mechanics. Vehicle performance: engine characteristics, resistances to motion, acceleration performance, gradeability, maximum speed. Power trains: clutch, gear box, propeller shaft, joints, differentials, gear ratios. Brales: basic requirements, directional stability, braking force distrubition.								
Course Objectives	To present the fundamentals of the performance of unguided ground vehicles. To familiarize with the basic concepts and basic terminology of automotive engineering.								
Learning Outcomes and Competences	To gain a qualitative and scientific calculation based understanding of the performance of the ground vehicles. An ability to perform basic performance calculations.								
Textbook and /or Reference	1. Theory of Ground Vehicles, J. Y. Wong, Wiley, 1993. 2. Performances of Motor Vehicles, Y.S. Ünlüsoy, METU, 2000. 3. Fundamentals of Vehicle Dynamics, T.D. Gillespie, SAE, 1992.								
Assessment Criteria						If any, mark as (x)		Percentage (%)	
	Midterm Exams					X		60	
	Quizzes								
	Homeworks								
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
	Final Exam					X		40	
Instructors	Assoc.Prof. Omer KELES								
Week	Subject								
1	Introduction, basics of vehicle configurations, basic design considerations.								
2	Introduction, basics of vehicle configurations, basic design considerations.								
3	Fundamentals of tire mechanics.								
4	Fundamentals of tire mechanics.								
5	Resistances to motion.								
6	Resistances to motion.								
7	Engine characteristics and mathematical representation.								
8	Vehicle performance calculations, acceleration, velocity, gradeability.								
9	Vehicle performance calculations, acceleration, velocity, gradeability.								
10	Vehicle performance calculations, acceleration, velocity, gradeability.								
11	Vehicle performance calculations, acceleration, velocity, gradeability.								
12	Power trains, basic power train requirements, determination of gear ratios.								
13	Power trains, basic power train requirements, determination of gear ratios.								
14	Braking distribution.								