



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Vehicle Mechanics							
Course Code		OTT206		Course Level		Short Cycle (Associate's Degree)			
ECTS Credit	4	Workload	100 ( <i>Hours</i> )	Theory	3	Practice	1	Laboratory	0
Objectives of the Course		Student will be able to do calculations about vehicle mechanics							
Course Content		Rolling resistance, Acceleration resistance. Aerodynamic resistance, Bernolli equation, Aerodynamic resistance force, Lateral forces, Linear forces, Mathematical and physical expressions, Motor and vehicle performance, Movement in the concept, Air resistance, Transmission resistance, Slope resistance, Wind resistance, Vehicle physical behavior, Transmission, Moment and power account, Hydraulic power transmission, Electric clutch, Table value reading, Power and torque transmission, Gear ratio, Drive force, Transmission efficiency, Mechanical gearbox, Automatic gearbox, Differential gear ratio, Motion transmission, Shaft, Moment and power transmission, Dynamic and static loads, Rubber materials, Static and dynamic movements of wheels, Rim material, Motor performance values, Road-to-ground conditions, Road-wheel relationship, Road-speed relationship, Tables, Hydraulic systems, Hydraulic sealing elements, Brake system-related empirical expressions, Brake systems, Road-ground information, Brake distribution and sand anda systems, Motion characteristics of vehicles, Motion resistances in vehicles, Slip and lateral slip in vehicles, Smooth linear movements in vehicles, Geometric calculations, Camber, Kaster, toe-in, toe-out, kingpim and total angle, Shock Absorbers, Swing arms, Steering system geometric calculations, Rotation angle, Steering center Calculations related to hydraulic systems, Calculations related to electrical systems, Steering gear ratios account							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)		Lec. Ahmet Fatih HACIYUSUFOĞLU							

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

### Recommended or Required Reading

1	Research Methods and Techniques
---	---------------------------------

Week	Weekly Detailed Course Contents	
1	Theoretical	Rolling resistance, Acceleration resistance. Air resistance, Transmission resistance, Hill resistance
2	Theoretical	Wind resistance, Physical behavior of vehicle, Motion resistance, Lateral forces, Aerodynamic resistance, Bernolli equation
3	Theoretical	Aerodynamic resistance force, Lateral forces, Linear forces, Mathematical and physical expressions, Engine and vehicle performance
4	Theoretical	Motion transmission in the concept, Torque and power account, Hydraulic power transmission, Electric clutch, Table value reading
5	Theoretical	Power and torque transmission, Gear ratio, Drive force, Transmission efficiency, Mechanical gearbox, Automatic gearbox
6	Theoretical	Differential gear ratio, Motion transmission, Shaft
7	Theoretical	Moment and power transmission, Dynamic and static load
8	Theoretical	Rubber materials, Static and dynamic movements of wheels, Rim material
9	Intermediate Exam	Midterm
10	Theoretical	Hidrolik sistemler, Hidrolik sızdırmazlık elamanları, Fren sistemi ile ilgili ampirik ifadeler
11	Theoretical	Brake systems, Road-ground information, Brake distribution and control systems
12	Theoretical	Road motion characteristics of vehicles, Motion resistance in vehicles, Skidding and lateral drift in vehicles, Uniform linear movements in vehicles
13	Theoretical	Geometric calculations, Camber, kaster, toe-in, toe-out, kingpim and total angle, Shock Absorbers, Swing arms, Steering system geometric calculations, Rotation angle,
14	Theoretical	Calculations related to hydraulic systems, Calculations related to electrical systems, Steering gear ratios account
15	Theoretical	Motor performance values, Road-to-ground conditions, Road-wheel relationship, Road-speed relationship, Tables



16	Final Exam	Semester final exam
----	------------	---------------------

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Lecture - Practice	14	0	1	14
Assignment	10	0	2	20
Term Project	3	0	2	6
Quiz	3	0	2	6
Midterm Examination	1	5	1	6
Final Examination	1	5	1	6
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = <b>ECTS</b>				4
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes	
1	
2	
3	
4	
5	To be able to calculate the resistance forces during the movements of vehicles

Programme Outcomes (Automotive Technology)	
1	To be able to interpret and evaluate data, identify problems, analyze them, and develop evidence-based solutions by using basic knowledge and skills in the field.
2	Must be able to choose and effectively use the modern techniques, tools and information technologies necessary for field related applications.
3	Must be able to gain practical skills by examining relevant processes in industry and service sector on site.
4	They must be able to produce solutions, take responsibility for teams or do individual work when they encounter situations unforeseen in the field related applications.
5	Awareness of the need for lifelong learning; it must be able to follow the developments in science and technology and to constantly renew itself.
6	Must be able to use computer software and hardware at the basic level required by the field
7	Must have job security, worker health, environmental protection knowledge and quality awareness.
8	He must possess a level of foreign language knowledge that is capable of following the innovations in his area of expertise and communication techniques.
9	Must be able to acquire basic theoretical and practical knowledge about the field in mathematics, science and basic engineering.
10	It should have the ability to plan the processes / processes of the Automotive Program to meet the expectations of the sector.
11	To be able to design the systems and components related to the field by using technical drawing, computer aided drawing, designing using simulation programs and using various softwares, to be able to make basic sizing calculations, to be able to master professional plans and projects.

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High				
	L1	L2	L3	L4
P1	5	5	5	5
P2	1	1	1	1
P3	1	1	1	1
P4	2	2	2	2
P5	3	3	3	3
P9	3	3	3	3
P10	2	2	2	2
P11	2	2	2	2

