



ESOGÜ Mechanical Engineering Department

COURSE INFORMATION FORM

SEMESTER	Fall
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COURSE CODE	151817xxx/151837xxx	COURSE NAME	AUTOMOTIVE ENGINEERING
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
7	3	0		3	5	COMPULSORY () ELECTIVE (X)	Turkish
COURSE CATAGORY							
Basic Science		Basic Engineering		Mechanical. Engineering [if it contains considerable design, mark with (√)]			Social Science
		X		()			
ASSESSMENT CRITERIA							
MID-TERM				Evaluation Type		Quantity	%
				1 st Mid-Term			
				2 nd Mid-Term		1	25
				Quiz			
				Homework		1	20
				Project		1	25
				Report			
Others (.....)							
FINAL EXAM						1	30
PREREQUIEITE(S)				NONE			
COURSE DESCRIPTION				Course devoted to all aspects of automotive engineering			
COURSE OBJECTIVES				The objective of the course is; to define, calculate, simulate, analyze resistance to motion, ideal traction (constant power) hyperbola, reciprocating IC engine full load characteristics, engine-vehicle compliance, traction effort characteristics, traction dynamics and acceleration limit, braking dynamics and deceleration limit. To teach fundamentals of automotive design parameters. Additionally, by doing a project study, to teach fundamentals of research, development process and lifelong learning.			
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION				Who will take the course shall define and recognize fundamentals of Automotive engineering, calculate and simulate vehicle and engine characteristics, traction and braking performances of a vehicle. Beside these; improve ones abilities of to do research, report and presentation in group studies.			
COURSE OUTCOMES				<ol style="list-style-type: none"> 1. Defines classical and modern power train systems. 2. Defines and Simulates vehicle constant speed characteristics 3. Defines and Simulates full load engine characteristics 4. Defines and Simulates traction effort characteristics 5. Understands and calculates traction performance and acceleration limits 6. Understands and calculates braking performance and deceleration limits 7. Uses modern computation tolls to do engineering analysis 8. Gains ability to do fundamental research and literature review and understands importance of lifelong learning. 			
TEXTBOOK				1.Taşıt Mekanîği, Prof.Dr. Selim Çetinkaya, Nobel Yayın Dağıtım ISBN: 975-591-103-0			

	2.Motorlu Taşıtlar, Temel ve Tasarım Esasları, Cilt I Tahrik Sürüş Sistemleri MMO/2008/484-ve Cilt II Fren ve Direksiyon Sistemleri, MMO/2008/485 Prof.Dr. Nusret Sefa KURALAY 3.Performance of Road Vehicles, Middle East Technical University, Ankara, 2012 Prof.Dr. Y. SamimÜNLÜSOY
OTHER REFERENCES	1. Taşıt Mekanîği, Prof.Dr. Şazi İpek, Orta Doğu Teknik Üniversitesi, 1969 Yayın No: 23, 2. Vehicle and Engine Technology, Heinz Heisler, Arnold Publication, ISBN: 0 340 691186 7, 3. The Automotive Chassis: Engineering Principles, Prof.Dipl.-Ing. Jörnßen Reimpell et al, ISBN: 0 7506 5054 0, 4. Handbook of Automotive, BOSCH-SAE Publication
TOOLS AND EQUIPMENTS REQUIRED	

COURSE SYLLABUS	
WEEK	TOPICS
1	Introduction: Course Web System. Course Content: Homework: Creation of study teams and selection of team vehicles Project: Preparation of project study, introduction of data bases, and declaration of the study Classical Vehicle Configuration, Vehicle – Engine evaluation
2	Resistances to motion and constant speed characteristics
3	Definition and plotting of ideal traction (constant power) hyperbola and homework 1 Homework 1: Plotting of constant speed characteristics and ideal traction hyperbola using MS Office EXCEL for the group vehicle
4	Torque, power, and brake specific fuel consumption for reciprocating internal combustion engines. Definition of engine characteristics.
5	Simulation of reciprocating IC engine characteristics at full load. Homework 2: Plotting and simulation of full load engine characteristics for the group engine using MS Office EXCEL for the group vehicle
6	Vehicle transmission, transmission ratio, coefficient of geometric transmission, Project: Study subject definition and declaration
7	Plotting and interpretation of tractive effort characteristics of a vehicle Homework 3: Plotting and simulation of tractive effort for group vehicle
8, 9	Mid-Term Examination
10	Reserved power, acceleration and slop limits
11	Traction dynamics, dynamic axle loads, coefficient of load distribution, coefficient of adhesion and net tractive effort
12	Braking dynamics, braking axle loads, coefficient of adhesion at braking, net braking effort
13	Maximum deceleration and minimum braking distance
14	Project presentations
15,16	Finals

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems.	X		
2	Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.		X	
3	Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods.			X
4	Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies.	X		
5	In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.			X
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.			X
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.			X
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.		X	
9	Understanding of professional and ethical issues and taking responsibility			X
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.			X
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.			X
1:None. 2:Partially contribution. 3: Completely contribution.				

Prepared by: Doç. Dr. Mustafa Ertunç TAT

Date: 15.07.2015

Signature(s):