



ESOGÜ Mechanical Engineering Department

COURSE INFORMATION FORM

SEMESTER	Spring
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COURSE CODE	151818471	COURSE NAME	INTERNAL COMBUSTION ENGINE (TECHNIQUE ELECTIVE II)
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
8	3	0	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

	Evaluation Type	Quantity	%
MID-TERM	1 st Mid-Term	1	40
	2 nd Mid-Term		
	Quiz		
	Homework		
	Project		
	Report		
	Others (.....)		

FINAL EXAM		1	60
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PREREQUIEITE(S)	Mathematic, Phisic, Chemistry. Fluid mechanic
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COURSE DESCRIPTION	Fundamentals of Internal Combustion Engines. Working principles of Otto and Diesel Engines. Thermodynamics cycles and efficiencys. Basic calculations of engines Fuels
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COURSE OBJECTIVES	Description of Internal Combustion Engines Calculations of basic engine length with using basic engineering science , standarts. and engine design criterions. A gain of sellect ability engine type . and using space .Modern motor technologies Alternative fuels and effect of exhaust missions to air pollutions
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ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	To have preliminary preparation in the field of automotive engineering and to recognize basics of vehicle.
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COURSE OUTCOMES	<ol style="list-style-type: none"> 1. Learn the types of internal combustion engines and using space.. 2. Understand, themodynamics and efficiensy of Otto and Diesel engines 3. Learn the working principles of Otto and Diesel engines. 4. Learn the effect of combustion prosses and knocing to the engine performance . 5. Understand the fuel injection in Otto and Diesel engines. 6. Understand how operating system works.
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	<p>7. Learn basic calculations of engines.</p> <p>8. Understand alternative fuels and exhaust emissions.develops ability of following to current engineering issues</p>
TEXTBOOK	Grohe, G., Çev.Kuşhan, B. (1999) Otto ve Dizel Motorları , İstanbul., Bilim Teknik Yayınevi
OTHER REFERENCES	<ol style="list-style-type: none"> 1. Taylor ,C.F. &Taylor, E.S.(1986) The Internal Combustion Engines International Textbook Company. Pennsylvania 2. Seiffert U. &Walzer, P.(1984) The Future for Automotive 3. Technology. Wolfsburg ,Volkswagenwerk 4. Borat,O. (1982)Yanma Stokiyometrisi , İstanbul, İTÜ MakinaFakültesi 5. Benson,R.S., (1985) Advenced Engineerig Thermodynamics, 2nd Edition, London, Pergamon Press
TOOLS AND EQUIPMENTS REQUIRED	Engine models

COURSE SYLLABUS	
WEEK	TOPICS
1	Introduction, classification of engines, , general notions and descriptions
2	Description of ideal engine, comparative cycles,base of thermodynamics
3	Engine efficiencies and concept of power
4	Calculation of dimensions of engine
5	Ignition systems, its types and components
6	Denotatiton in Otto engines,its reasons, its prevention methods, fuel's rezistances to denotation,Octane number and its definition
7	Burning and periods in Diesel engines, reasons of denotation, its prevention methods, fuel's rezistances to denotation, Cetane number and its definition
8	Mid-Term Examination
9	Mid-Term Examination
10	Mixture formation in engines, carburettors, emissions of exhaust, catalytic converters
11	Direct and indirect injection systems in Otto engines
12	Mixture formation in Diesel engines,direct and indirect injection systems
13	Mechanical and electronic injection systems in Diesel engines
14	Feedback of EGR exhaust gases,overloading, turbocharge
15,16	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and ...Mechanical engineering; an ability to apply theoretical and practical knowledge on solving and modeling of ... Mechanical engineering problems.		X	
2	Ability to determine, define, formulate and solve complex ... Mechanical 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 ... Mechanical engineering applications; ability to effective use of information technologies.		X	
5	In order to investigate ... Mechanical 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: 14.11.2017

Signature(s):

