



Course Code-Name	ME422 - Internal Combustion Engines								
Course Schedule	Fall 2017 - 2018								
Instructor's Name Phone E-mail Office Hours	Prof.Dr. Cem SORUŞBAY 0212 – 285 3466 sorusbay@itu.edu.tr								
Assistant's Name Phone E-mail									
Textbook & Supplementary Materials	Pulkrabek, W.W., <u>Engineering Fundamentals of the Internal Combustion Engine</u> , Prentice Hall, New Jersey, 1997. Lecture Notes by C. Soruşbay (Electronic copy – Power Point presentations)								
Recommended Prerequisites									
Course Outline	Principles of SI and CI engine operation, 4-stroke and 2-stroke engines, ideal cycles, thermal efficiency, fuels and combustion, induction, compression, combustion and expansion-exhaust processes, mixture preparation in SI and CI engines, fuel systems, engine characteristics.								
Midterm Dates	27 th October and 15 th December at 09:00								
Grading	<table> <tr> <td>Homeworks</td> <td>3 x %5 = 15%</td> </tr> <tr> <td>Mid-term Examination i</td> <td>15%</td> </tr> <tr> <td>Mid-term Examination ii</td> <td>20%</td> </tr> <tr> <td>Final</td> <td>50%</td> </tr> </table>	Homeworks	3 x %5 = 15%	Mid-term Examination i	15%	Mid-term Examination ii	20%	Final	50%
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Mid-term Examination i	15%								
Mid-term Examination ii	20%								
Final	50%								
Attendance	%80								
Additional Remarks									



Course Code-Name	ME422 - Internal Combustion Engines		
Course Objectives	This course will provide, i) fundamental knowledge on the thermodynamics of internal combustion engines, ii) ability to examine the parameters effecting engine performance and improve engine design technology.		
Course Outcomes Indicates the level of satisfaction of the course for the outcomes listed. ①: Low Level of Satisfaction ②: High Level of Satisfaction	an ability to apply knowledge of mathematics, science and engineering		②
	an ability to design and conduct experiments, as well as to analyze and interpret data	①	
	an ability to design a system, component or process to meet desired needs		②
	an ability to function on multi-disciplinary teams	①	
	an ability to identify, formulate, and solve engineering problems		②
	an understanding of professional and ethical responsibility	①	
	an ability to communicate effectively	①	
	the broad education is necessary to understand the impact of engineering solutions in a global and societal context	①	
	a recognition of the need for, and an ability to engage in life-long learning		②
	a knowledge of contemporary issues		②
an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice		②	

COURSE PLAN

Week	Topics
1	Introduction, Principles of SI and CI engine operation
2	Principles engine operation, Classification, 2-stroke engines, 4-stroke engines
3	Ideal standard cycles, thermal efficiencies, comparisons
4	Engine characteristics and performance
5	Classification of engine fuels
6	Characteristics of engine fuels, knock resistance, ignition tendency, combustion chemistry
7	Real engine strokes, induction stroke, volumetric efficiency
8	Compression stroke, combustion in SI engines and influencing parameters
9	Abnormal combustion, parameters influencing knock and early ignition
10	No Lectures
11	Combustion in CI engines
12	Combustion in CI engines, parameters influencing ignition delay
13	Expansion and exhaust strokes, exhaust emissions
14	Mixture preparation in SI engines
15	Mixture preparation in CI engines