



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Fuel and Burning Events in Engines							
Course Code		MME602		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	9	Workload	228 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		Natural and Applied Science institute supplies and teaches to students that burning reaction, first and second rules of burning reaction, chemical balance, flames, NO and other emissions, produce fuel, chemical formulation and environmental dirty.							
Course Content		Definition of produce of rigid, liquid and gas fuel, chemical formulation, used additives in the gasoline, diesel oil, fuel oil, gas oil, calculations of burning temperature and equations, burning variations and productions, chemical balance, reaction of kinetic, diffusion kinetic, piratic burning applications, technology about burning in the engine, burning of gasoline, diesel oil and calculating up and down thermal price and environmental interesting.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Project Based Study, Individual Study, Problem Solving					
Name of Lecturer(s)									

### Prerequisites & Co-requisites

Language Requisite	Yes
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### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	15
Final Examination	1	60
Quiz	4	15
Assignment	5	5
Term Assignment	1	5

### Recommended or Required Reading

1	1. T.Charles Fayette The internal combustion in theory and practice
2	2. Internal Combustion Engines: Performance, Fuel Economy and Emissions Chandos Publishing (Oxford) (20 Nov 2009)

Week	Weekly Detailed Course Contents	
1	Theoretical	Equation of burning and fuel, theoretical and real burning, formation enthalpy, chemical reaction first rule analyzed.
2	Theoretical	Reaction temperature and Adiabatic reaction temperature
3	Theoretical	3th rule of thermodynamic and differences entropy in the burning event, 2th solving of burning reaction,
4	Theoretical	Chemical balance fixed chemical balance of simple reactions, chemical balance of synchronous reactions.
5	Theoretical	Burnings, nominal and turbulence burnings, NO and SO emissions and prevented that.
6	Theoretical	Design of gas and liquid burnings
7	Theoretical	Calculation of burning temperature and chemical balance.
8	Intermediate Exam	Midterm exam
9	Theoretical	Burnings and practical applications.
10	Theoretical	Burning of gasoline and diesel oil
11	Theoretical	Burning equations of Stokiyometric poor and rich air fuel
12	Theoretical	Calculating of up and down thermal value.
13	Theoretical	Calculation of excess air coefficient and burning productions.
14	Theoretical	Burning productions and interesting environment.
15	Theoretical	Burning productions and interesting environment.
16	Final Exam	Final Exam



**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	16	5	3	128
Assignment	5	0	3	15
Term Project	1	15	10	25
Quiz	4	3	1	16
Midterm Examination	1	20	2	22
Final Examination	1	20	2	22
Total Workload (Hours)				228
[Total Workload (Hours) / 25*] = <b>ECTS</b>				9

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	It is thought definition of produce of rigid, liquid and gas fuel, chemical formulation, used additives in the gasoline, diesel oil, fuel oil, gas oil.
2	It can be calculated that burning and burning equations, burning variations and productions.
3	It is developed in the mind that calculating of burning temperature, chemical balance, reaction of kinetic, diffusion kinetic.
4	It is supplied that burning and piratic applications, technology about burning in the engine.
5	It is supplied that burning of gasoline, diesel oil and calculating up

**Programme Outcomes (Mechanical Engineering (English) Doctorate)**

1	1. In Mathematics, natural sciences and mechanical engineering, department has the sufficient infrastructure; the ability to use the theoretical and practical information for engineering solutions
2	2. The ability to identify, define, and solve the formula for complex engineering problems; the ability to select and apply for the appropriate analytical methods and modelling techniques
3	3. To meet desired needs of a system, system component, or process, analysing and designing skill under realistic constraints; in this respect, the ability to apply the methods of modern design
4	4. The ability to use and choose modern techniques and tools for required engineering applications and; the ability to use information technology effectively
5	5. The ability to design the experiment, collect the data for the experiment and interpret to analysing results
6	6. The ability to use computer software and hardware information, access to information and other information sources
7	7. The ability to work individually and with multidisciplinary teams effectively, taking responsibility self-confidence for complex situations
8	8. The ability to communicate with foreign colleagues by having high level of foreign language knowledge in the field of engineering
9	9. Monitoring the science and technology developments and the ability to renew itself with innovative ideas constantly
10	10. Professional and ethical responsibility awareness
11	11. Having an adequate information and awareness in the subjects of occupational safety, occupational health, social security rights, quality control and management issues of environmental protection
12	12. The ability to appreciate the effects of engineering solutions and applications in universal and social dimensions
13	13. The ability to be enlightened to the experts or non-expert audience groups on the issues related with engineering problems and solutions written and oral
14	14. The ability to have adequate knowledge and skills in the project development and application, manage the activities planning, including the projects to the employees having the responsibility of the project by increasing vocational awareness

**Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High**

	L1	L2	L3	L4	L5
P1	5	4	5	4	5
P2	5	4	5	5	5
P3	5	5	5	5	5
P4	4	3	5	5	4
P5	4	5	5	4	4
P6	4	4	4	4	5
P7	5	5	4	4	4
P8	5	5	4	5	3
P9	4	5	5	5	5
P10	5	3	5	4	5



P11	4	4	5	4	5
P12	4	4	5	4	4
P13	4	5	4	4	4
P14	5	5	5	5	5

