

# ALTERNATIVE ENGINES AND FUELS

1	Course Title:	ALTERNATIVE ENGINES AND FUELS
2	Course Code:	OTOZ206
3	Type of Course:	Compulsory
4	Level of Course:	Short Cycle
5	Year of Study:	2
6	Semester:	4
7	ECTS Credits Allocated:	3.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	2
11	Prerequisites:	To be engine knowledge.
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Öğr.Gör. BEKİR ERDAĞ
15	Course Lecturers:	Meslek Yüksekokulları Yönetim Kurullarının görevlendirdiği öğretim elemanları.
16	Contact information of the Course Coordinator:	Öğr.Gör.Bekir ERDAĞ erdag@uludag.edu.tr
17	Website:	
18	Objective of the Course:	Transportation and Environmental pollution, use of fossil fuels in vehicles, methods to obtain fossil fuels, Chemical properties of hydrocarbons, Characteristics of fossil fuels, Use of alternative fuels in engine powered vehicles, Effect of using alternative fuels on emissions, Hybrid technology, Electric vehicles.
19	Contribution of the Course to Professional Development:	To provide the student's gaining knowledge about the general characteristics of the classical fuels (gasoline, diesel) and alternative fuels (LPG, natural gas, hydrogen, methanol, ethanol, biodisel, etc.), the conversion systems which are used to make the vehicle functional for the use of alternative fuel and making comparison of the vehicles which are converted to use of alternative fuels or only used for classical fuels in behalf of conversion cost, durability, performance (cost, moment, specific fuel consumption) and exhaust emissions.
20	Learning Outcomes:	
	1	To explain alternative engine and fuel search the reasons why of contention.
	2	To explain new engine in the search for alternative could be engine types, this engine general work, the principles of sincere combustion from engine different aspects of the advantages / disadvantages of contention.
	3	To define different fuel types and this fuel species in our country in particular can be used or fuel of used definitions.
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<b>21</b>	Course Content:		
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<b>Week</b>	<b>Theoretical</b>	<b>Practice</b>	
<b>1</b>	LPG fuel system and safety system rules.	LPG fuel system and safety system rules.	
<b>2</b>	LPG Injection system parts	LPG Injection system parts	
<b>3</b>	LPG Injection System Settings.	LPG Injection System Settings	
<b>4</b>	Natural Gas Fuel System, Natural Gas Properties	Natural Gas Fuel System, Natural Gas Properties	
<b>5</b>	Of Natural Gas Fuel System Safety Rules	Of Natural Gas Fuel System Safety Rules	
<b>6</b>	Characteristics of Natural Gas Injection System Components and Operation Principles	Characteristics of Natural Gas Injection System Components and Operation Principles	
<b>7</b>	Adjustment of Natural Gas Injection System	Adjustment of Natural Gas Injection System	
<b>8</b>	Bio Fuels, Bio Diesel Production, Bio Fuel Production	Bio Fuels, Bio Diesel Production, Bio Fuel Production	
<b>Activites</b>		<b>Number</b>	<b>Duration (hour)</b>
<b>Theoretical</b>			<b>Total Work Load (hour)</b>
<b>10</b>	Alcohol Fuels, Ethanol, Methanol Features	14	2.00
<b>Practicals/Labs</b>		14	2.00
<b>Self study and preperation</b>		0	0.00
<b>Homeworks</b>		1	14.00
<b>Projects</b>		1	20.00
<b>Field Studies</b>		0	0.00
<b>Midterm Exams</b>		1	1.00
<b>12</b>	Wankel Engines	1	1.00
<b>Others</b>		0	0.00
<b>13</b>	Working Principle and Maintenance of Hybrid Engine	1	1.00
<b>Final Exams</b>			
<b>Total Work Load</b>			93.00
<b>Total work load/ 30 hr</b>			3.07
<b>ECTS Credit of the Course</b>			3.00
<b>22</b>	Textbooks, References and/or Other Materials:		
<b>23</b>	Assesment		
<b>TERM LEARNING ACTIVITIES</b>		<b>NUMBE R</b>	<b>WEIGHT</b>
Midterm Exam		1	20.00
Quiz		0	0.00
Home work-project		2	20.00
Final Exam		1	60.00
Total		4	100.00

Contribution of Term (Year) Learning Activities to Success Grade	40.00
Contribution of Final Exam to Success Grade	60.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	Measurement and evaluation is carried out according to the principles of Bursa uludag University Associate and Undergraduate Education Regulation.
<b>24</b>	<b>ECTS / WORK LOAD TABLE</b>

<b>25</b>	<b>CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS</b>															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	4	0	0	3	0	0	0	0	0	2	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>LO: Learning Objectives    PQ: Program Qualifications</b>																
<b>Contribution Level:</b>	<b>1 very low</b>		<b>2 low</b>		<b>3 Medium</b>		<b>4 High</b>		<b>5 Very High</b>							