ENGINE DESIGN AND CONTROL FUNDAMENTALS									
1	Course Title:	ENGINE	DESIGN AND CONTROL FUNDAMENTALS						
2	Course Code:	OTO5124							
3	Type of Course:	Optional							
4	Level of Course:	Second Cycle							
5	Year of Study:	1							
6	Semester:	2							
7	ECTS Credits Allocated:	6.00							
8	Theoretical (hour/week):	3.00							
9	Practice (hour/week):	0.00							
10	Laboratory (hour/week):	0							
11	Prerequisites:	Yok							
12	Language:	Turkish							
13	Mode of Delivery:	Face to face							
14	Course Coordinator:	Prof. Dr. ALİ SÜRMEN							
15	Course Lecturers:	Yok	Yok						
16	Contact information of the Course Coordinator:	surmen@uludag.edu.tr +90 (224) 294 1965 Mühendislik Fakültesi Otomotiv Mühendisliği Bölümü							
17	Website:								
18	Objective of the Course:	Objective of the course is to teach about engine design and control fundamentals.							
19	Contribution of the Course to Professional Development:	Students learn the basic numerical analysis methods they will use in modeling and design. Students learn basic modeling and simulation tools they can use for real engineering systems. Students learn to apply some mathematical tools necessary for the design of physical systems. Students learn essential approaches for analytical design of engineering systems.							
20	Learning Outcomes:	1							
		1	Skill of comprehending engine design and control fundamentals						
		2	Skill of solving engineering problems related to engine design and control fundamentals						
		3	Skill of using information technologies effectively						
		4	Skill of gaining to conduct individual and team work						
		5	Skill of communicating oral and written communication in Turkish						
		6	Skill of gaining awareness of lifelong learning necessity						
		7							
		8							
		9							
		10							
21	Course Content:								
		Co	ourse Content:						
Week	Theoretical		Practice						

1	Limits of performance factors in Engi design: piston speed, frictions, mech-	ne anical an tio									
	mechanical and thermal stresses										
2	Limits of performance factors in Engi design: piston speed, frictions, mech volumetric efficiency, compression ra mechanical and thermal stresses	ne anical an tio,									
3	Charge induction and exhaust proces analysis	SS									
4	Investigation of volumetric efficiency performance of an engine; effect of v design	alve train									
5	Investigation of volumetric efficiency performance of an engine; effect of v design	alve train									
6	Introduction to variable valve design technologies										
7	Engine performance analysis: limits a requirements from standpoint of F/A thermal efficiency, combustion efficiency mechanical efficiency, stresses	and ratio, ncy,									
8	Engine performance analysis: limits a requirements from standpoint of F/A thermal efficiency, combustion efficiency mechanical efficiency, stresses	and ratio, ncy,									
9	Power control in CI and SI engines: f	uels,									
Activit	es			Number	Duration (hour)	on (hour) Total Work Load (hour)					
Theore	netion, diesel knock			14	3.00	42.00					
Practic	als/Labs	•		0	0.00	0.00					
Setst	Connol Presisting this ture preparation	and	F	10	6.00	60.00					
Homew	vorks			2	30.00	60.00					
Pr bje ct	Emission control in SI and CI engines	5		0	0.00	0.00					
Field S	tudies			0	0.00	0.00					
Midtern	Lexams Lextbooks, References and/or Other		1	û Sürmen. A.: Motor Ko	0.00 nstrüksivon Ders N	0.00 otlari					
Others				0	0.00	0.00					
Final E	kams		3	Ali Sürmen. İhsan Ka	1800 amangil. Ridvan Ai	18.00 slan Motor					
Total W	Vork Load		14			180.00					
Total w	ork load/ 30 hr		F	undamentals, McGraw	Hill Book Company	600 New York,					
ECTS	Credit of the Course					6.00					
ZJ	FARNING ACTIVITIES	NUMBE	w	FIGHT							
		R									
Midtern	n Exam	0	0.	0.00							
Quiz		0	0.00								
Home	work-project	3	40.00								
Final E	xam	1	60.00								
I otal	ution of Torm (Veer) Leave ' A. (' '''	4	1(100.00							
Succes	s Grade	es to	40.00								
Contrib	oution of Final Exam to Success Grade	<u>)</u>	60	0.00							
Total			100.00								

Measurement and Evaluation Techniques Used in the	3 or 4 homework as a detailed project are given as
Course	midterm grade.
	Final exam.

24 ECTS / WORK LOAD TABLE

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ1 0	PQ11	PQ12	PQ1 3	PQ14	PQ15	PQ16
ÖK1	1	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contrib ution Level:	1 very low 2 lo			2 low		3	Medi	um	4 High			5 Very High				