	HYDF	RAULI	C MACHINERY								
1	Course Title:	HYDRA	ULIC MACHINERY								
2	Course Code:	MAK3006									
3	Type of Course:	Compulsory									
4	Level of Course:	First Cy	First Cycle								
5	Year of Study:	3									
6	Semester:	6									
7	ECTS Credits Allocated:	5.00	5.00								
8	Theoretical (hour/week):	3.00	3.00								
9	Practice (hour/week):	0.00	0.00								
10	Laboratory (hour/week):	0									
11	Prerequisites:	No	No								
12	Language:	Turkish									
13	Mode of Delivery:	Face to face									
14	Course Coordinator:	Prof. Dr. İRFAN KARAGÖZ									
15	Course Lecturers:	Prof.Dr. İrfan Karagöz Prof.Dr. Atakan Avcı									
16	Contact information of the Course Coordinator:	karagoz@uludag.edu.tr Bursa Uludağ Üniversitesi 41960									
17	Website:										
18	Objective of the Course:	This course is designed to introduce engineering students to the application of governing fluid flow equations and dimensional analysis to the hydraulic machinery, to give the student working knowledge of the principles, design and operation of pumps and turbines.									
19	Contribution of the Course to Professional Development:	Students will have the knowledge and skills about the design of the turbines, pumps and ventilators that they will encounter in their professional life, as well as the use of them in engineering systems.									
20	Learning Outcomes:										
		1 Ability to apply the basic principles and equations governing the fluid flow to turbomachinery									
		2	Ability to analyze the means by which the energy transfer is achieved in the chief types of hydraulic machines and efficiency								
		3	Ability to explain the principles, design and operation characteristics of pumps and turbines								
		4	Ability to use the dimensionless numbers for turbomachines								
		5	Ability to analyze and design hydraulic machinery systems,								
		6	Ability to select the right type of pump and turbine for given operating conditions								
	7										
		8									
		9									
		10									
21	Course Content:										
	Course Content:										

Week	Theor	neoretical									Practice								
1	mecha	eview of the governing equations of fluid echanics and thermodynamics. Definition of rbomachines and classification																	
2		asic theory of turbomachinery. Euler quation. Definitions of velocities																	
3		vdraulic turbines. Definitions of power and ficiencies																	
4	Action operat			s. Basi	c theo	ory, des	sign a	nd											
5	Reacti operat			nes. Ba	asic tł	neory, o	desigr	n and											
6	Cavita	tio	n.																
7		nalysis and design of axial flow hydraulic Irbines.																	
8		Related dimensionless parameters and imilarity.																	
9	Repea	epeating courses and exersizs																	
10		Pumps and fans. Definitions of power and ficiencies. Classification																	
11		Centrifugal pumps and fans. Basic theory and design																	
12	Cavita	Cavitation in pumps. Characteristic curves																	
13	Pump	ар	plicati	ion an	d sele	ections.													
Activites							Numb	er		Dura	Duration (hour)			Total Work Load (hour)					
Theore	Theoretical							3.	Hydra	ulic and	d Comp	re 3.5) 0le	essible Flow Turbonnaechines						
Practica	als/Lab	s								D D				0.00			0.00		
S ezf3 stu	øys sæs	npe	apera	ition					·	12			3.00			36.00			
Homew	/orks								Ę	5			8.00			40.00			
Project: Midtorp	s						R			30,00			0.00			0.00			
	eld Studies									0			0.00			0.00			
	dterm exams												8.00			8.00			
Others	o work project									3			4.00			12.00			
Final E															12.00				
	Total Work Load														150.00				
Sataley	Sate work ladd 30 hr							79	50.00				5.00						
	ECTS Credit of the Course								5.00										
Total									10	100.00									
Measur Course		an	d Eva	luatio	n Tec	hnique	s Use	d in th	ne Cla	assical	exam	S							
24	ECTS	5/	WO	RK L	OAD	TAB	LE												
25		CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS																	
	P	21	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9		PQ11	PQ12	PQ1	PQ14	PQ15	PQ16		
ÖK1	5		4	3	0	2	0	0	0	0	0 0	0	0	3 0	0	0	0		
ÖK2	0		0	4	0	3	0	0	0	0	0	0	0	0	0	0	0		
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ÖK3	0	5	0	0	3	0	0	0	0	0	0	0	0	0	0	0
ÖK4	2	4	3	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK5	2	2	5	0	3	0	0	0	0	0	0	0	0	0	0	0
ÖK6	1	0	4	0	2	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contrib ution Level:	ion				2 low		3	Medi	um		4 Hig	h		5 Ver	y High	