ROTATING FLUIDS DYNAMICS

1	Course Title:	ROTATING FLUIDS DYNAMICS	
2	Course Code:	MAK4440	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	8	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. HABİB UMUR	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	Prof.Dr. Habib UMUR umur@uludag.edu.tr / 02242941910 / U.Ü. Müh. Fak. Mak. Müh. Bölümü, BURSA	
17	Website:		
18	Objective of the Course:	To get information about the axial and rotating compressible and incompressible flows, to calculate the fluid power and to define the device which adds energy to a fluid or extracts from it.	
19	Contribution of the Course to Professional Development:	To get information about the axial and rotating compressible and incompressible flows, to calculate the fluid power and to define the device which adds energy to a fluid or extracts from it.	
20	Learning Outcomes:		
		1	Definition and classification of rotating and axial flows
		2	Fluid power and devices in rotating and axial flows
		3	Characteristics of compressible and incompressible flows
		4	Clasification of pums, fans, blowers and compressors
		5	Performance curves, similarity rules and calculating methods in rotating flows
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	General definition: dynamics of rotating and axial flows and classification	

2	Derivation and governing equations in roating flows	
3	Investigation of rotating Newtonian and non-Newtonian fluids	
4	Compressible flow equations in various sections	
5	Evaluation of pressure loss and fluid power	
6	Classification of pumps and elementary pump theory	
7	Classification of turbines in terms of flow type	
8	I. Midterm exam	
9	Definition and calculating methods of fans, blowers and compressors	
10	performance curves in radial impellers	
11	Applications of similarity rules	
12	Idealized wind-turbine theory	
13	II. Midterm exam	
14	Closures	

22	Textbooks, References and/or Other Materials:	1) Umur, H., Akışkanlar Mekaniği, Dora Yayinevi, 2009. 2) White F.M., Fluid Mechanics, McGrawHill, 1986. 3) Karagöz, İ., Hidrolik Makinalar, Medyay, 2014.

Activites			Number	Duration (hour)	Total Work Load (hour)
TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**			
Theoretical			14	3.00	42.00
Practicals/Labs			0	0.00	0.00
Self-study and preperation	0	0.00	14	3.00	42.00
Homeworks			5	5.00	25.00
Project			0	0.00	0.00
Final Exam	1	60.00	1	2.00	2.00
Field Studies			0	0.00	0.00
Midterm exams			2	4.00	8.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00			
Others			0	0.00	0.00
Final Exams			1	10.00	10.00
Contribution of Final Exam to Success Grade		60.00			
Total Work Load					127.00
Total work load/ 30 hr					4.23
Measurement and Evaluation Techniques Used in the total evaluation					
ECTS Credit of the Course					4.00

24	**ECTS / WORK LOAD TABLE**

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	5	5	0	0	0	0	4	4	0	4	0	0	0	0	0	0
ÖK2	5	5	0	0	0	0	4	4	0	4	0	0	0	0	0	0
ÖK3	5	4	0	0	0	0	4	4	0	4	0	0	0	0	0	0
ÖK4	5	5	0	0	0	0	4	4	0	4	0	0	0	0	0	0

ÖK5	5	4	0	0	0	0	4	4	0	4	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**