DEPARTMENT OF ENERGY SCİENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
EBT303	3			5
Title	**T**	**A**	**L**	**ECTS**
Fluid Mechanics	3	2	0	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Energy Science and Technology					
Forms of Teaching and Learning	Face to Face					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	The objective of this course is to provide fundamental knowledge of fluid mechanics, which is essential for energy science, and to develop the ability to apply this knowledge in simple engineering and practical applications. Additionally, it aims to teach the mathematical and physical fundamentals required for the design and analysis of systems involving fluids.					
Content	The course covers topics such as hydrostatics, flow kinematics and kinetics, conservation laws (control volume, Euler, Navier-Stokes, Reynolds), potential flow, groundwater flow, boundary layer flows, pipe and channel flows, flow forces, and similarity theory.					
Prerequisites	None					
Coordinator	Assist. Prof. Dr. Osman Sinan Süslü					
Lecturer(s)	Assist. Prof. Dr. Osman Sinan Süslü					
Assistant(s)						
Work Placement	No					

Recommended or Required Reading	
Books / Lecture Notes	Leopold Böswirth, 1993, Technische Strömungslehre Lehr- und Übungsbuch, Sabine Bschorer Wiesbaden Springer Verlag 2014. Çengel, Y.A., Cimbalak, J.M., 2004, Fluid Mechanics, McGraw Hill. ISBN:9781259921902
Other Sources	Çengel, Y.A., Cimbalak, J.M., 2004, Fluid Mechanics, McGraw Hill. Becker, E.,1993 Technische Strömungslehre, B.G. Teubner Stuttgart Böswirth, L. Bschorer S.2014: Technische Strömungslehre, Springer

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences	60	%

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Engineering	20	%
Engineering Design	10	%
Social Sciences		%
Educational Sciences		%
Natural Sciences	10	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	%40
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam	1	%60
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	10	9	112
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	4	4
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	4	4
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hours)	**6**

Learning Outcomes

1	Students learn the flow movement
2	Students can apply fluid mechanics in simple engineering-practical structures.
3	Students will learn the behavior of fluids in a stationary or moving state.

Weekly Content

1	Fundementals of Fluid Mechanics

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2	Properties of Fluids
3	Pressure and Fluid Statics
4	Fluid Kinematics
5	Mass, Bernoulli, and Energy Equations
6	Momentum Analysis of Flow Systems
7	Dimensional Analysis and Modeling
8	Midterm Exam
9	Dimensional Analysis and Modeling
10	Flow in Pipes
11	Differential Flow Analysis
12	Approximate Solutions of the Navier-Stokes Equation
13	External Flow: Drag and Lift
14	Compressible Flow
15	Open-Channel Flow and Turbomachinery
16	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1	5	4	3	4	4	5	5
2	5	4	3	4	4	3	4
3	5	4	3	5	4	3	5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

P1 Working with modern scientific sources.
P2 Having modern scientific knowledge and scientific analysis abilities and being able to apply them to scientific problems.
P3 Having theoretical and practical skills in the area of Energy Science and Technology.
P4 Having foreign language skills to follow the worldwide advancements in the field of Energy Science and Technology and to be able to discuss them with foreign colleagues.
P5 Having computational skills for research data analysis purposes.
P6 Having appropriate skills for academic and industrial jobs, being ready to take responsibility in working life.
P7 Having knowledge about work occupational work and safety.

Compiled by:	
Date of Compilation:	