



COURSE INFORMATION FORM

Course Name	Course Code
FLUID MECHANICS	151414554

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
4	3	0	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
2	2			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

<b>Prerequisite(s) if any</b>	
<b>Objectives of the Course</b>	The aim of the course is introducing the fluid that has an important role in civil engineering and behavior of fluids under different conditions will be learnt. Student will be able to produce solutions for an application of encountering problem.
<b>Short Course Content</b>	Introducing of fluids, determination of behavior of fluids under stresses, computation of pressure and the pressure forces applied on different surface geometries, analyzing stability of floating bodies on the basis of the Law of Archimet, obtaining the fundamental equations of 1 dimensional flow such as conservation of mass, momentum and energy, practical applications of these equations, laminar and turbulent flow concepts, the fundamental equations of two-dimensional ideal flows, potential flow, vorticity and circulation.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Learns the basic principles and concepts of Fluid Mechanics in terms of Civil Engineering.	1, 2	1, 2	A
2 Gains the ability to understand and solve problems related to fluids encountered in civil engineering applications.	1, 2, 5	1, 2	A
3 Analyzes flows in pipes and open channels.	1, 2, 5	1, 2	A
4 Can analyze the flows in pipes and open channels and reach solutions to the issues applied in civil engineering.	1, 2, 5	1, 2	A
5			
6			
7			
8			

\*Teaching Methods 1:Expression, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Trouble/Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

\*\*Measuring Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

<b>Main Textbook</b>	<b>Sümer, M., Ünsal, İ., Bayazıt, M., Hidrolik, Birsen Yayınevi,1983</b>
<b>Supporting References</b>	Sümer, M., Ünsal, İ., Bayazıt, M., Hidrolik, Birsen Yayınevi,1983. Yalçın Yüksel, Akışkanlar Mekaniği ve Hidrolik White,2000 F. M. , Fluid Mechanics , 2nd Edition, Mc Graw-Hill, 1987. Raudkiwi , A. J., Callender , R. A., Edward Arnold, Advanced Fluid Mechanics, , 1975.
<b>Necessary Course Material</b>	

<b>Course Schedule</b>	
<b>1</b>	Basic concepts, unit systems, dimensional analysis
<b>2</b>	Behavior under stresses: Compressibility and viscosity, statics of fluids
<b>3</b>	Compound vessels and manometers
<b>4</b>	Stability of floating bodies
<b>5</b>	Kinematics
<b>6</b>	Lagrange and Euler methods
<b>7</b>	streamline and trajectory terms
<b>8</b>	Mid-Term Exam
<b>9</b>	Fundamental equations of one dimensional flows
<b>10</b>	Bernoulli equation and applications
<b>11</b>	Impulse-momentum equation
<b>12</b>	water jets
<b>13</b>	One dimensional flow of real fluids, laminar and turbulent flow
<b>14</b>	Two dimensional flow of ideal fluid
<b>15</b>	Eddy (vorticity) and circulation
<b>16,17</b>	Final Exam

<b>Calculation of Course Workload</b>			
<b>Activities</b>	<b>Number</b>	<b>Time (Hour)</b>	<b>Total Workload (Hour)</b>
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,...)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
	1	2	2
	1	15	15
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	15	15
Final Exam	14	3	42
Studying for Final Exam	14	3	42
<b>Total workload</b>			<b>118</b>
<b>Total workload / 30</b>			<b>3,93</b>
<b>Course ECTS Credit</b>			<b>4</b>

Evaluation	
Activity Type	%
Mid-term	
Quiz	
Homework	
Bir öge seçin.	
Bir öge seçin.	
<b>Final Exam</b>	
<b>Total</b>	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	PROGRAM OUTCOME	Contribution
1	Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering	
2	Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.	
3	Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that	
4	Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies.	
5	In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.	
9	Understanding of professional and ethical issues and taking responsibility	
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.	
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.	

LECTUTER(S)				
Prepared by				
Signature(s)				

Date:06.06.2024