



COURSE INFORMATION FORM

Course Name	Course Code
MECHANICAL APPLICATIONS	151418712

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
8	3	0	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	3	3		

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	In this course, in addition to the theoretical knowledge taught in strength courses, it is aimed to reinforce theoretical knowledge with laboratory experiments and to provide students with the ability to analyze, evaluate and produce solutions to mechanical problems, as well as evaluating the results.
Short Course Content	Basic information about general structural elements, experimental methods, shear and bending tests on simple beams, torsion in cylindrical elements, bending stress, shear center, buckling, bending and support reactions tests on frames.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Can compare theoretical and experimental results.	1, 2, 3, 5	1, 5,10	A, E
2 Can calculate shear force and bending in simple beams and find them experimentally.	1, 4, 5, 6	1, 2, 3, 12, 15	A, D, E, I
3 Can calculate stress in members under bending effect and demonstrate it experimentally.	1, 2, 4, 5	1, 2, 3, 12, 15	A, D, E, I
4 Can calculate stress in members under bending and demonstrate it experimentally.	1, 2, 3, 5	1, 2, 3, 12, 15	A, D, E, I
5 Can calculate support reactions of frames under different loads and verify them experimentally.	1, 2, 4, 5	1, 2, 3, 12, 15	A, D, E, I
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

Main Textbook	Erol, H., Şengel, H.S. ve Özçelikörs, Y., Mukavemet I-II sunu ders notları.
Supporting References	Omurtag M.H., Mukavemet (Cilt 1), Birsen yayınevi, 2011. Handbook of Experimental Solid Mechanics, Editor: William Sharpe, Springer, New York, 2008.
Necessary Course Material	

Course Schedule	
1	General information
2	Experimental studies and measurement techniques
3	Shear and bending of simple beams
4	Shear and bending test on simple beams
5	Torsion
6	Torsion test on cylindrical elements
7	Stress calculation in bars under bending effect
8	Mid-Term Exam
9	Bending stress test
10	Shear stress, shear center
11	Bending test on non-symmetrical sections
12	Buckling
13	buckling test
14	Internal forces and reactions in frame systems
15	Frame loading experiment
16,17	Final Exam

Calculation of Course Workload			
Activities	Number	Time (Hour)	Total Workload (Hour)
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,...)	14	2	28
Homework	8	5	40
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	1	30	30
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	10	10
Final Exam	1	2	2
Studying for Final Exam	1	15	15
		Total workload	169
		Total workload / 30	5.63
		Course ECTS Credit	6

Evaluation	
Activity Type	%
Mid-term	30
Quiz	
Homework	30
Bir öge seçin.	
Bir öge seçin.	
Final Exam	40
Total	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	4
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.	4
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	3
4	Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies.	3
5	In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	5
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	3
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	1
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.	2
9	Understanding of professional and ethical issues and taking responsibility	2
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.	1
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.	2
12	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	4

LECTUTER(S)				
Prepared by	Assist. Prof. Dr. Hakan EROL			
Signature(s)				

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