DEPARTMENT OF MECHANICAL ENGINEERING
COURSE SYLLABUS

Course Details				
Code		**Academic Year**		**Semester**
MAB202		2		4
Title		**T**	**A**	**L**	**ECTS**
Thermodynamics		3	2		6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Mechanical Engineering					
Forms of Teaching and Learning						
Course Type	**Compulsory**	✓	**Elective**			
Objectives	After completing this module, students will have basic knowledge have the fundamentals of thermodynamics and, through the abstract thinking and thinking in physical models, can assess and accompany fundamental processes. The event conveys: 60% knowledge & understanding, 40% analysis & methodology					
Content	• -General basics • -Energy and the first law of thermodynamics • -Entropy and the second law of thermodynamics • -Thermodynamic properties of gases and liquids • -Real substances • -Quasistatic status changes and technical processes • -Exergy • -Mixture of ideal gases • -Combustion • -Humid air					
Prerequisites	-					
Coordinator	Dr. Mehmet İPEKOĞLU					
Lecturer(s)	Prof. Dr.-Ing. habil. Jadran Vrabec Dr. Öğr. Üyesi Mehmet İPEKOĞLU					
Assistant(s)	Dr.-Ing. Thorsten Windmann RA. Süleyman ŞİŞMAN RA. Halil İbrahim TANRIVERDİ RA. Arda ÇETİNER					
Work Placement	-					

Recommended or Required Reading	
Books / Lecture Notes	• Slides accompanying the lecture • Stephan, P., Schaber, K., Stephan, K., Mayinger, F.: Thermodynamik • Band 1, Einstoffsysteme, Springer, Berlin Heidelberg • Baehr, H. D.; Kabelac S.: Thermodynamik • Springer, Berlin Heidelberg • Heintz, A.: Gleichgewichtsthermodynamik • Springer, Berlin Heidelberg • Gmehling, J.; Kolbe, B.: Thermodynamik

	• VCH Verlagsgesellschaft mbH, Weinheim • Tester, J. W.; Modell, M.: Thermodynamics and its applications • Prentice-Hall, Englewood Cliffs
Other Sources	

Additional Course Material

Documents	15 lecture notes
Assignments	3
Exams	2

Course Composition

Mathematics und Basic Sciences	40	%
Engineering	40	%
Engineering Design		%
Social Sciences		%
Educational Sciences	20	%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30 **%**
Quiz		
Assignments	3	10 **%**
Attendance		
Recitations	14	
Projects		
Final Exam	1	60 **%**
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	4	56
Assignments	3	3	9
Presentation / Seminar Preparation			
Midterm Exam	1	80	80
Recitations	14	2	28
Laboratory			

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Projects			
Final Exam	1		120
		Total Work Load	**335**
		ECTS Points (Total Work Load / Hours)	**6**

Learning Outcomes	
1	Learn the ideal gas approach.
2	Acquires knowledge of the laws of thermodynamics.
3	Acquires knowledge of the 1st law of thermodynamics.
4	Acquires knowledge of the 2nd law of thermodynamics.
5	Gains knowledge of the material behavior of real fluids
6	Learn the thermodynamics of cycle processes.
7	Acquires knowledge of counter-clockwise circular processes
8	Acquires knowledge of gas mixtures
9	Acquires knowledge of chemical reactions

Weekly Content	
1	Basic of thermodynamics
2	Basic of thermodynamics
3	Basic of thermodynamics
4	1. Law of Thermodynamics
5	1. Law of Thermodynamics
6	2nd law of thermodynamics
7	2nd law of thermodynamics
8	Substance behavior of real fluids
9	Substance behavior of real fluids
10	Cycle processes
11	Cycle processes
12	Cycle processes
13	Gas Mixtures
14	Gas Mixtures
15	Chemical reactions

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

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
1	5	4	4	3	5	3	3	4	5	4	4

2	5	4	4	3	5	3	3	4	5	4	4
3	4	5	4	5	5	3	4	4	5	5	5
4	5	4	4	3	5	3	3	4	5	4	4
5	5	4	4	3	5	3	3	4	5	4	4
6	5	4	4	3	5	3	3	4	5	4	4
7	5	4	4	3	5	3	3	4	5	4	4
8	4	5	4	5	5	3	4	4	5	5	5
9	5	4	4	3	5	3	3	4	5	4	4

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=196	
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