DEPARTMENT OF ENERGY SCİENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
EBT204	2			4
Title	**T**	**A**	**L**	**ECTS**
Thermodynamics	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	At the end of the course, students are expected to have the basic knowledge of thermodynamics and the ability to think abstractly in physical models and thus to evaluate the fundamental processes of thermodynamics.					
Content	This course provides a comprehensive overview of the fundamental principles and applications of thermodynamics. Content covers topics related to understanding energy transformations and thermodynamic behavior of systems.					
Prerequisites	None					
Coordinator						
Lecturer(s)	Asst. Prof. Osman Sinan SÜSLÜ					
Assistant(s)	Rsh. Asst. Yusuf KARAKAŞ					
Work Placement	No					

Recommended or Required Reading	
Books / Lecture Notes	P. Stephan, K.-H. Schaber, K. Stephan, F. Mayinger: Thermodynamik, Grundlagen und technische Anwendungen H. D. Baehr, S. Kabelac: Thermodynamik MÜHENDİSLER İÇİN TERMODİNAMİK, Merle C. POTTER - Craig W. SOMERTON, ISBN978-605-133-548-3
Other Sources	Y. A. Çengel: Thermodynamics: An Engineering Approach P. Stephan, K.-H. Schaber, K. Stephan, F. Mayinger: Thermodynamik, Grundlagen und technische Anwendungen H. D. Baehr, S. Kabelac: Thermodynamik K. Lucas: Thermodynamik

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition

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Mathematics und Basic Sciences	45	%
Engineering	30	%
Engineering Design	5	%
Social Sciences		%
Educational Sciences		%
Natural Sciences	20	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	35%
Quiz		
Assignments	1	20%
Attendance		
Recitations		
Projects		
Final Exam	1	45%
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	12	6	72
Assignments	5	4	20
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hours)	**6**

Learning Outcomes

1	He/she is learning the ideal gas approximation.
2	Gains general knowledge about the laws of thermodynamics.
3	Gains knowledge about the properties of real and ideal gas.

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4	Learns thermodynamic cycles.
5	Gains knowledge about ideal gas mixtures.
6	Gains knowledge about combustion reactions.
7	Gains knowledge about the structure, working principle and calculation of compressors and turbines.
8	Gains information about the structure, working principle and calculation of coolers and thermal power plants.

Weekly Content	
1	Fundamentals of thermodynamics
2	First law of thermodynamics
3	Second law of thermodynamics and entropy
4	Thermodynamic properties of fluids and Exergy
5	Ideal Gas
6	Ideal Gas Mixtures and Real Gases
7	Wet Steam
8	Midterm Exam
9	Humid Air
10	Compressors
11	Combustion
12	Turbines
13	Gas Power Cycles
14	Steam Power Cycles
15	Cooling Cycles
16	Final Exam

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

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
1	5	4	5	5	4	5	4
2	4	5	3	4	3	4	5
3	4	5	2	5	4	5	4
4	4	5	4	4	2	5	5
5	5	4	5	4	5	4	4
6	5	4	4	5	4	2	3
7	5	4	4	5	3	2	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.

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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:	Asst. Prof. Osman Sinan SÜSLÜ
Date of Compilation:	