AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Thermodynamics and İts Applications								
Course Code	FİZ439		Couse Level	First Cycle (Bachelor's Degree)					
ECTS Credit	7	Workload	181 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The aim of the course is to teach the principles and applications of thermodynamics.								
Course Content	Thermodynamic Equilibrium and Temperature; Temperature scales, Ideal Gas, Laws of Thermodynamics, , Heat, Specific Heat, Gasoline engine-Otto cycle, second law of thermodynamics-Carnot cycle								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Problem Solving								
Name of Lecturer(s)	Prof. Cesur EKİZ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	70
Quiz	2	5
Assignment	5	5

Recommended or Required Reading	
1	Reif, F., Çeviri: Elerman, Y. &Durlu, T.N. (1965). İstatistik Fizik (Berkeley Fizik Serisi, cilt 5). İstanbul: Bilim Yayınları,
2	Apaydin, F. (2004). İstatistik Fizik, Ankara: Hacettepe Üniversitesi Yayınları.
3	Karaoğlu, B. (2003). İstatistik Mekaniğe Giriş. İstanbul: Seyir yayıncılık.

Week	Weekly Detailed Course Contents	
1	Theoretical	Equilibrium and State Quantities
2	Theoretical	Equilibrium and State Quantities
3	Theoretical	Equilibrium and State Quantities
4	Theoretical	The Laws of Thermodynamics
5	Theoretical	The Laws of Thermodynamics
6	Theoretical	The Laws of Thermodynamics
7	Theoretical	The Laws of Thermodynamics
8	Intermediate Exam	Midterm Exam
9	Theoretical	Phase transitions and chemical reactions
10	Theoretical	Phase transitions and chemical reactions
11	Theoretical	Phase transitions and chemical reactions
12	Theoretical	Thermodynamic potentials
13	Theoretical	Thermodynamic potentials
14	Theoretical	Thermodynamic potentials
15	Theoretical	Thermodynamic potentials

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4.5	3	105
Assignment	5	4	1	25
Quiz	2	4	1	10
Midterm Examination	1	15	2	17

Final Examination	1	22	2	24
			Total Workload (Hours)	181
			[Total Workload (Hours) / 25*] = **ECTS**	7
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	
2	
3	
4	
5	

Programme Outcomes *(Physics)*	
1	To understand the importance of physics by understanding the general concepts of physics, matter and energy
2	To be able to define the movements of matter and to distinguish the characteristics of movements under different force (potential)
3	Be able to say the meaning of Lagrange and Hamiltonian formulations of the movement and apply them to simple problems,
4	To be able to express the fundamental concepts such as time, space, force, momentum and energy in the movements of matter close to the speed of light and be able to solve and interpret the simple problems related to
5	To be able to establish the relationship between electric and magnetic forces and to be able to illustrate their applications to technology and solve problems related to the movement of particles in electric and magnetic fields
6	Be able to say the basic laws of electromagnetics and apply them to problems, illustrate their applications to simple technology
7	To be able to tell the reasons of the differences between the classical cases and the quantum scale and explain the reasons
8	Explain the concepts of discontinuity, uncertainty, matter-antimatter, indecisiveness of quantum physics with examples and explain simple problems related to the subject.
9	To be able to solve the problems of micro-particles under different simple potentials and be able to say their meanings
10	To be able to establish the relationship between the movements and properties of multi-particle systems and the laws of probability and solve simple problems
11	To be able to illustrate the laws, meanings and applications of thermodynamics and use them
12	Be able to use their knowledge about quantum physics and mechanics in explaining some properties of atoms and nuclei
13	To be able to show the meanings of some theoretical concepts by experimenting, and develop a strong relationship between thought and the real world, develop analytical thinking
14	To be able to apply the meanings of the basic laws of physics, their comprehension of universality and the relations between them and the unity of the laws of nature.
15	Use computer to solve physics problems
16	To be able to understand the problems by using their analytical knowledge skills and to propose solutions by dealing with the laws of physics
17	Be able to use the knowledge of physics to understand new technologies
18	To be able to tell the relations between symmetry and conservation laws in laws of physics

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	4				
P2			4	4	
P4			4		
P13					4
P14		4			4
P17	4	3			