



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Chemical Thermodynamics							
Course Code		KİM545		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	6	Workload	150 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		This lecture is designed to provide a solid background for the students who intend to go on to the graduate study and a thorough background in the fundamentals of chemical thermodynamics							
Course Content		To teach the basics of thermodynamics , the ideal gas law, properties of gas mixtures, kinetic gas theory, basic thermodynamic laws, relationship with daily life of the laws of thermodynamic, trying to explain that some of the events in our environmental with the basic laws of thermodynamic, the states of the matter, phase diagrams, real gases transition thermodynamics of the materials							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Problem Solving					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	60
Assignment	4	20

Recommended or Required Reading

1	Physical Chemistry, P. W. ATKINS
2	Physical Chemistry, Ira N. LEVINE
3	Kimyasal Termodinamik, N. K. TUNALI, B. R. TÜRKMEN
4	Physical Chemistry of Polymers, A. TAGER
5	Physical Chemistry of Macromolecules, S. F. SUN, Introduction to Physical Polymer Science, L. H. SPERLING

Week	Weekly Detailed Course Contents	
1	Theoretical	Heat, work and energy
2	Theoretical	Thermodynamic equilibrium and thermodynamic properties
3	Theoretical	The first law of thermodynamics
4	Theoretical	Energy, Enthalpy and Heat capacities
5	Theoretical	The Hess's law, Standart enthalpy chancing, Bonding energy
6	Theoretical	The second law of thermodynamics
7	Intermediate Exam	Midterm exam
8	Theoretical	Reversible transformations, Entropy
9	Theoretical	Carnot cycle
10	Theoretical	The absolute entropy
11	Theoretical	Free energy and Chemical Equilibrium
12	Theoretical	Mixtures and free energy
13	Theoretical	The chancing of free energy at chemical reactions
14	Theoretical	Equilibrium constant and chancing with temperature
15	Theoretical	Colligative properties
16	Final Exam	FINAL EXAM

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	4	0	8	32
Reading	1	0	37	37
Quiz	1	2	4	6
Midterm Examination	1	12	2	14



Final Examination	1	16	3	19
Total Workload (Hours)				150
[Total Workload (Hours) / 25*] = ECTS				6
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	To teach the basics of thermodynamics
2	The ideal gas law and properties of gas mixtures
3	The kinetic gas theory and basic thermodynamic laws
4	The relations between daily life and the laws of thermodynamic
5	to be able to explain the events in our environment with the basic laws of thermodynamic
6	The states of the matter, phase diagrams, transition thermodynamics of the materials
7	The viscosity of gases
8	to be able to explain the deviation from ideals
9	The Real gases

Programme Outcomes (Chemistry Master)

1	To be able to gain proficiency in depths and analysis by statistical methods in the same or a related area depending on the undergraduate competence,.
2	To be able to use the knowledge of his/her field and the skills to solve problems and/or applications in interdisciplinary research.
3	To be able to adopt to evaluate the information and skill his/her field by critical approach.
4	To be able to evaluate the effect of important persons, case and fact on his/her field applications.
5	To be able to gain the ability to discuss write and orally present to a group of literate listener.
6	To be able to communicate orally and written in a foreign language at least at European language B2 level.
7	To be able to use computer programs related to his/her field and have skills for informatics communication.
8	To be able to be careful in protecting social, scientific and cultural ethics in collection data, application and presentation.
9	To be able to develop strategic, political and application plans in his/her field and may evaluate the outcomes in quality periods.

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

	L1	L2	L3	L4	L5	L6	L7	L8	L9
P1	5	5	5	5	5	5	5	5	5
P2	5	4	5		3	3	3	3	3
P3	5	4	5		3	3	3	3	3
P4	5	4	4		3	3	3	3	
P5	5	3	5		3	3	3	3	
P6	5	3							
P8				4					
P9	4	4							

