AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title		Statistical Thermodynamics						
Course Code		KİM664		Couse Level		Third Cycle (Doctorate Degree)		
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		This lecture is designed to provide a solid background for students who intend to go on to the graduate study and a thorough background in the fundamentals of statistical thermodynamics						
Course Content		Basic statistical concepts, configurations and statistical weights, thermodynamic calculations, entropy and irregularite, statistical entropy, depending of thermodynamic parameters onto the partition functions, calculation od equilibrium constant, calculation of reaction rate constants in partition functions, state functions, free molecules						
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, Prof. Dr. Yüksel SARIKAYA
2	Physical Chemistry, F. W. ATKINS

Week	Weekly Detailed Course Contents	
1	Theoretical	Basic statistical concepts
2	Theoretical	The distribution of particles in an identical energy levels
3	Theoretical	Partition rules
4	Theoretical	Thermodynamic calculations
5	Theoretical	Entropy and irregularity
6	Theoretical	Statistical entropy
7	Intermediate Exam	Midterm Exam
8	Theoretical	The molecular partition function
9	Theoretical	Depending of thermodynamic parameters onto the partition functions
10	Theoretical	Calculation of equilibrium constant
11	Theoretical	Calculation of reaction rate constants in partition functions
12	Theoretical	Mean energies
13	Theoretical	heat capacity
14	Theoretical	State functions
15	Theoretical	
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	87	87
Quiz	1	2	4	6
Midterm Examination	1	12	2	14

Final Examination	1	16	3	19
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Basic statistical concepts
2	Configurations and statistical weights
3	The distribution of particles in an identical energy levels
4	Partition rules
5	Thermodynamic calculations
6	Entropy and irregularite
7	Statistical entropy
8	The molecular partition function
9	Depending of thermodynamic parameters onto the partition functions
10	Calculation od equilibrium constant
11	Calculation of reaction rate constants in partition functions
12	Mean energies
13	State functions
14	Free molecules

Programme Outcomes *(Chemistry Doctorate)*

1	Depending on the master degree competences, develops, insights and innovates current and advanced knowledge and/or research in proficiency level.
2	Gains high skill levels in using research methods in the field of his/her study.
3	Comprehends the interaction between disciplines related to his/her field. Reaches to original results using his/her expertise in order to analyze, synthesize and evaluate new and complicated ideas.
4	Enlarges the boundaries of his/her field of knowledge by publishing at least one research paper in national and/or international peer-reviewed journals.
5	Defends his/her original opinions related to his/her field before authority and communicates effectively illustrating his/her competence.
6	May communicate and debate written, orally and visually in European Language Portfolio level C1.
7	Follows the developments in computer software and information and communication technologies developed for his/her research area and uses these in order to solve research problems.
8	Collaborates for scientific research with national and international research teams.
9	Contributes to the course of creation and maintenance of knowledge based society and by introducing the scientific, social and cultural developments to the society he/she is living in.

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	L10	L11	L12	L13	L14
P1	5	5	5	5	5	5	5	5	5	5	5	5	5	5
P2	5	4	5		3	3	3	3	4	4	4	4	4	4
P3	5	4	5		3	3	3	3	3	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												