



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Adsorption in Polymers							
Course Code		KİM642		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	8	Workload	203 (<i>Hours</i>)	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 adsorption onto polymers							
Course Content		Sorption onto surface of polymer sorbents and desorption, porosity on polymer sorbents, determination of porosity of polymer sorbents, determination of specific surface area and total pore volume of polymeric sorbents, classification of polymeric sorbents, mechanism of sorption of low-molecular substances by polymers, equilibrium sorption studies of polymers, industrial adsorption applications of polymers, applications of polymeric sorbents in nanotechnology							
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	Adsorption, Surface Area and Porosity, S. J. Gregg, K. S. W. SING
2	Physical Chemistry of Polymers, A. TAGER
3	Introduction to Physical Polymer Science, L. H. SPERLING
4	Physical Chemistry of Macromolecules, S. F. SUN

Week	Weekly Detailed Course Contents	
1	Theoretical	Sorption onto surface of Polymer sorbents and desorption
2	Theoretical	Porosity on polymer sorbents
3	Theoretical	Determination of porosity of Polymer sorbents
4	Theoretical	Determination of specific surface area
5	Theoretical	Determination of total pore volume of polymeric sorbents
6	Theoretical	Methods of forming porous surface of polymers
7	Theoretical	Classification of polymeric sorbents
8	Intermediate Exam	Midterm exam
9	Theoretical	Mechanism of sorption of low-molecular substances, inert sorbats and non-inert vapours by polymers
10	Theoretical	Ion-exchange resins
11	Theoretical	Gel ion exchange resins
12	Theoretical	Standart and macro porous ion exchange resins
13	Theoretical	Equilibrium sorption studies of polymers
14	Theoretical	Industrial adsorption applications of polymers
15	Theoretical	Applications of polymeric sorbents in nanotechnology
16	Final Exam	FINAL EXAM

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	7	10	1	77
Midterm Examination	1	40	2	42



Final Examination	1	40	2	42
Total Workload (Hours)				203
[Total Workload (Hours) / 25*] = ECTS				8
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Sorption onto surface of Polymer sorbents and desorption
2	Porosity on polymer sorbents, Determination of porosity of Polymer sorbents
3	Determination of specific surface area and total pore volume of polymeric sorbents
4	Methods of forming porous surface of Polymers
5	Classification of polymeric sorbents
6	Mechanism of sorption of low-molecular substances by Polymers
7	Gel ion exchange resins, Standar and macro porous ion exchange resins
8	Equilibrium sorption studies of polymers
9	Industrial adsorption applications of polymers
10	Applications of polymeric sorbents in nanotechnology

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
P1	5	5	5	5	5	5	5	5	5	5
P2	4	4	5		3	3	3	3	4	4
P3	4	4	5		3	3	3	3	3	3
P4	4	4	4		3	3	3	3		
P5	3	3	5		3	3	3	3		
P6	3	3								
P8				4						
P9	4	4								

