



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Chemical Speciation							
Course Code		KİM617		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	10	Workload	251 ( <i>Hours</i> )	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		Learning and apply necessary analysis for the separation of metal ions forms							
Course Content		Speciation can be defined as the oxidation step in which an element is effective in an environment, determining the chemical species such as the molecular structure and the concentration of these species. Metals have different effects depending on different forms of soil water or organism. Therefore, the derivation of metals in various environmental samples is of great importance. In an organism, since the necessity and toxicity of an element is also dependent on the chemical structure of the species in question, the chemical speciation in biological samples is also very important.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion					
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	Chemical Speciation in the Environment, Second Edition Editor(s): A.M. Ure C.M. Davidson, Wiley, 2002
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Week	Weekly Detailed Course Contents	
1	Theoretical	What is the chemical speciation?
2	Theoretical	What is the importance of chemical speciation in environmental processes?
3	Theoretical	The importance of chemical speciation and determination of biological systems
4	Theoretical	Various approaches to the determination of chemical species in biological materials
5	Theoretical	Elements of chemical species dependence of toxic reactions.
6	Theoretical	Via the environment and food intake of trace elements, the effect of other chemical species on the adsorption of trace elements
7	Theoretical	Chemical species in freshwater and terrestrial organisms and biogeochemical cycles
8	Intermediate Exam	Midterm Exam
9	Theoretical	Analytical determination of chemical species in water
10	Theoretical	Transformation of heavy metals in soil
11	Theoretical	Metal transport and chemical species in lakes
12	Theoretical	Chemical species in plants and seawater
13	Theoretical	Chemical species in industrial wastes and chemical species
14	Theoretical	Student Presentations
15	Theoretical	Student Presentations
16	Final Exam	Final Exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	5	25	1	130
Term Project	1	30	1	31
Midterm Examination	1	20	1	21



Final Examination	1	25	2	27
Total Workload (Hours)				251
[Total Workload (Hours) / 25*] = ECTS				10
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Learning the importance of chemical speciation in environmental processes
2	Learning the effects of industrial wastes and chemical species
3	Chemical species and their effects on soil, water and plant
4	Evaluation of chemical species and their effects in biological materials
5	Learning about the analysis of chemical speciation

### 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
P1	5	4	5	4	5
P2	5	4	5	4	5
P3	5	4	5	4	5
P4	5	4	5	4	5
P5	5	4	5	4	5

