



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Advanced Inorganic Chemistry							
Course Code		KİM531		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	9	Workload	226 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The objective of this course is to give the students a basic understanding to theoretical inorganic chemistry and to apply this understanding to problem solving involving critical thinking. This basic understanding is to prepare the students for additional coursework, either in chemistry or in other disciplines, and to help the student function in a technological society.							
Course Content		Fundamentals, atom, molecule, chemical bond, binding in polyatomic molecules, structures and energy of metallic and ionic solids, acids and bases, chemistry of metals, coordination compounds.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Problem Solving					
Name of Lecturer(s)		Prof. Muhammet Emin GÜNAY							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	60
Quiz	4	10
Assignment	4	10

Recommended or Required Reading

1	Inorganic Chemistry, Third Edition, C. E. Housecroft, A. G. Sharpe, Pearson Edu. Ltd. (2008) London.
2	Inorganic Chemistry, Shriver & Atkins', Oxford (2010).
3	İnorganik Kimya-I,II, Prof. Dr. Cemal Kaya, Palme Yayıncılık (2011).
4	Miessler, G. L., Tarr, D. A. (Çeviri Editörleri: Karacan, N., Gürkan, P.) İnorganik Kimya, Palme Yayınları-Ankara (2002)

Week	Weekly Detailed Course Contents	
1	Theoretical	Basic concepts: atoms, periodic table, molecules
2	Theoretical	Bonding models: Lewis structure, octet rule and isoelectronic species
3	Theoretical	Molecular shape and the VSEPR model, stereoisomerism
4	Theoretical	Bonding models: valence bond theory
5	Theoretical	Bonding models: molecular orbital theory
6	Theoretical	Bonding in polyatomic molecules
7	Theoretical	Structure and energetics of metallic and ionic solids: packing of sphere, polymorphism in metals, alloys and intermetallic compounds, bonding in metals and semiconductors
8	Theoretical	Structure and energetics of metallic and ionic solids:, ionic lattice, lattice energy, the Born-Haber cycle.
9	Intermediate Exam	Midterm Exam
10	Theoretical	Acids-bases
11	Theoretical	d-block metal chemistry, Coordination numbers and geometries
12	Theoretical	Bonding in d-block metal complexes: valence bond theory
13	Theoretical	Bonding in d-block metal complexes: crystal field theory
14	Theoretical	Bonding in d-block metal complexes: molecular orbital theory
15	Theoretical	Electronic spectra of the coordination compounds
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	4	6	0	24
Reading	1	0	56	56



Quiz	4	10	0	40
Midterm Examination	1	20	2	22
Final Examination	1	40	2	42
Total Workload (Hours)				226
[Total Workload (Hours) / 25*] = ECTS				9
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	to be able to apply the basic principles of quantum mechanics to determine electron configurations of atoms and ions.
2	to be able to understand and demonstrate the basic principles of periodicity.
3	to be able to recognize and demonstrate the basic principles of the structure determination of inorganic compound.
4	to be able to recognize the principles of chemical bonding (covalent-, ionic-, metallic-bond).
5	to be able to recognize the basic principles of acid-base chemistry and non-aqueous solvents.
6	to be able to recognize the basic principles of metals.
7	to be able to recognize the basic principles of metals.

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
P1	5	5	5	5	5	5	5
P2	5	5	5	5	5	5	5
P3	5	5	5	5	5	5	5
P5	3	3	3	3	3	3	3
P9	5	5	5	5	5	5	5

