

DESCRIPTION OF THE COURSE OF STUDY

Course code	0531-2CHEM-C16-CO1	
Name of the course in	Polish	Chemia Nieorganiczna
	English	Inorganic Chemistry

1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

1.1. Field of study	Chemistry
1.2. Mode of study	Full-time studies
1.3. Level of study	Undergraduate
1.4. Profile of study*	general academic
1.5. Person/s preparing the course description	Anna Adach
1.6. Contact	Anna.Adach@ujk.edu.pl; phone: +48 41 349 7037

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Language of instruction	Polish, English
2.2. Prerequisites*	Basics of Chemistry

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes	Lecture: 30 hrs, Seminar: 15 h, Laboratory: working on scientist project 90 hrs	
3.2. Place of classes	Classes in the didactic rooms at the UJK	
3.3. Form of assessment	test, final exam	
3.4. Teaching methods	Lecture, laboratory (self-conducted experiments), discussion (problem solving)	
3.5. Bibliography	Required reading	C. E. Housecroft, A. G. Sharpe, Inorganic Chemistry, Pearson Education Limited F. A. Cotton, G. Wilkinson, P. L. Gaus, Basic inorganic chemistry, Wiley S. F. A. Kettle, Physical Inorganic Chemistry. A Coordination Chemistry Approach, Oxford University Press
	Further reading	Online original papers from Ebsco, Elsevier, Springer and so on.

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

<p>4.1. Course objectives (including form of classes)</p> <p><i>C1. Building the knowledge base of inorganic and coordination chemistry based on chemistry of the chosen metals</i></p> <p><i>C2. Learning the basics of the research methods connected with contemporary inorganic and coordination chemistry</i></p> <p><i>C3. Practical acquisition of laboratory skills, preparation of coordination compounds and characterization by classical chemical analysis, determination of selected physicochemical properties</i></p>
<p>4.2. Detailed syllabus (including form of classes)</p> <p>Lecture:</p> <p>Chemistry of the chosen metals:</p> <p>(1) The chemistry of p-block elements metals: aluminum to thallium, germanium to lead, bismuth.</p> <p>(2) d-Block metal chemistry (ground state electronic configurations, variable oxidation states) the first row metals, the heavier metals: group 8, 9, 10, 11, 12.</p> <p>(3) d-Block metal chemistry-coordination complexes: coordination numbers and geometries, crystal field theory (the octahedral crystal field, the tetrahedral crystal field, the square planar crystal field, the energy separation (Δ), weak field and strong field, high- and low-spin octahedral complexes, electronic spectra (absorption and emission), application of Tanabe-Sugano diagrams, magnetic properties</p> <p>Seminar:</p> <p>Strengthening and expanding the content of the lectures by solving problems. Design of the synthesis for coordination polymers.</p> <p>most important stages of the bioprocess, they will learn about the construction and operation of bioreactors on a laboratory and quarter-technical scale. During the exercises, students will control the bioprocess and observe how changes in the conditions of the process will affect the quantity and quality of the obtained bioproduct.</p> <p>Laboratory exercises:</p>

Laboratory: The working on the scientific project: (1) synthesis of new coordination compounds with metal ions and physical-chemical characterization using different method.

4.3 Intended learning outcomes

Code	A student, who passed the course	Relation to learning outcomes
within the scope of KNOWLEDGE:		
W01	Student knows the basics of inorganic and coordination chemistry	CHEM1A_W01
W02	Knows the rules of nomenclature of coordination compounds, describes their structure and properties	CHEM1A_W07
W03	Characterizes coordination compounds based on physicochemical and analytical properties	CHEM1A_W07
within the scope of ABILITIES:		
U01	Student classifies basic inorganic and coordination compounds	CHEM1A_U01
U02	Student analyzes the structure and physico-chemical properties of the compounds	CHEM1A_U02
U03	Student possess practical skills in the preparation of various compounds	CHEM1A_U02
within the scope of SOCIAL COMPETENCE:		
K01	Student is aware of his level of knowledge and is active in the process of self-education	CHEM1A_K01

4.4. Methods of assessment of the intended learning outcomes

Teaching outcomes (code)	Method of assessment (+/-)														
	Exam oral/written*			Test*			Effort in class*			Self-study*			Group work*		
	Form of classes			Form of classes			Form of classes			Form of classes			Form of classes		
	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...
W01	+				+						+				
W02	+				+						+				
W03	+				+						+				
U01	+				+		+				+				
U02	+				+		+				+		+	+	
U03	+				+								+	+	
K01													+	+	

*delete as appropriate

4.5. Criteria of assessment of the intended learning outcomes

Form of classes	Grade	Criterion of assessment
lecture (L) (including e-learning)	3	Exam : the student must earn at least 60% of the total points.
	3,5	Exam : the student must earn 70% of the total points.
	4	Exam : the student must earn 80% of the total points.
	4,5	Exam : the student must earn 90% of the total points.
	5	Exam : Student gain more than 95% of total points.
classes (C)* (including e-learning)	3	Tests : the student must earn at least 60% of the total points.
	3,5	Tests : the student must earn 70% of the total points.
	4	Tests : the student must earn 80% of the total points.
	4,5	Tests : the student must earn 90% of the total points.
	5	Tests : Student gain more than 95% of total points.
others (...)* (including e-learning)	3	Student performed all practical tasks; wrote reports with corrections; earned 60% of correct answers.
	3,5	Student performed all practical tasks; wrote reports with corrections; earned 70% of correct answers.
	4	Student performed all practical tasks; wrote reports without corrections; earned 80% of correct answers.
	4,5	Student performed all practical tasks; wrote reports without corrections; earned 90% of correct answers.
	5	Student performed all practical tasks; wrote reports without corrections; earned >95% of correct answers.

5. BALANCE OF ECTS CREDITS – STUDENT'S WORK INPUT

Category	Student's workload	
	Full-time studies	Extramural studies
<i>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</i>	135	
<i>Participation in lectures*</i>	60	
<i>Participation in classes, seminars, laboratories*</i>	75	
<i>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</i>	115	
<i>Preparation for the lecture*</i>	10	
<i>Preparation for the classes, seminars, laboratories*</i>	60	
<i>Preparation for the exam/test*</i>	45	
TOTAL NUMBER OF HOURS	250	
ECTS credits for the course of study	10	

**delete as appropriate*

Accepted for execution (date and legible signatures of the teachers running the course in the given academic year)

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