

<b>Course title</b> Chemia nieorganiczna / Inorganic chemistry		<b>ECTS code</b> 13.3.0957	
<b>Name of unit administrating study</b> Faculty of Chemistry			
<b>Studies</b>			
<b>Field of study</b>	<b>Type</b>	<b>Form</b>	
Chemical business	Bachelor / Engineer	Full-time studies	
<b>Teaching Staff</b> Dr hab. Dariusz Wyrzykowski			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b> 5	
<b>A. Forms of classes, in accordance with the UG Rector's regulations</b> lecture, auditorium classes, laboratory classes		classes - 75 h tutorial classes – 10 h student's own work – 50 h	
<b>B. The realization of activities</b> multimedia presentation, in-class learning, laboratory experiments		Total: 125 h - 5 ECTS	
<b>C. Number of hours</b> 75 h (lecture 30 h, auditorium classes 15 h, laboratories 30 h)			
<b>The academic cycle</b> First year, summer semester			
<b>Type of course</b> obligatory		<b>Language of instruction</b> Polish	
<b>Teaching methods</b>  <ul style="list-style-type: none"> <li>•Lecture with multimedia presentation</li> <li>•The auditorium classes - calculations involving different aspects of inorganic chemistry</li> <li>•Practical laboratory work - chemical experiments, analysis of obtained results and discussion</li> </ul>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
		<b>A. Final evaluation, in accordance with the UG study regulations</b> <b>Lectures - exam,</b> lecture - exam, auditorium classes – course credit with a grade lab classes – course credit with a grade	
		<b>B. Assessment methods</b> Lectures - exam with open questions, Auditorium classes – two tests, Lab classes – completion with note	
		<b>C. The basic criteria for evaluation or exam requirements</b> <b>Lecture:</b> positive note from an exam with 15-20 open questions: 91-100%: 5.0 81-90%: 4.5 71-80%: 4.0 61-70%: 3.5 51-60%: 3.0 < 51%: 2.0 <b>Auditorium classes:</b> positive note from two tests, final note is an average from notes from both tests 91-100%: 5.0 81-90%: 4.5 71-80%: 4.0 61-70%: 3.5 51-60%: 3.0 < 51%: 2.0 <b>Lab classes:</b> positive note from each lab test, final note is an average from notes from all the tests 91-100%: 5.0 81-90%: 4.5 71-80%: 4.0 61-70%: 3.5 51-60%: 3.0 < 51%: 2.0	

## Required courses and introductory requirements

Basic chemistry

### Aims of education

- presenting basic issues in inorganic chemistry to students
- familiarize students with fundamental properties of the elements and inorganic compounds as well as their industrial role
- familiarize students with the basis of chemical calculations in the field of inorganic chemistry

### Course contents

**Topics of the lecture:** periodicity and the chemistry of the elements, physicochemical properties of inorganic and coordination compounds. The following items are included: periodicity, chemical bonding, coordination compounds, types of chemical reactions, properties of chemical elements and their compounds. The groups of elements are presented in the following order: group 1, group 2, group 13, group 14, group 15, group 16, group 17, group 18, and d-elements (groups 3-12; first transition row, second transition row, and third transition row).

**Topics of auditory classes:** basic types of inorganic compounds, balancing redox reactions, equilibria in the solutions of electrolytes.

**Topics of lab classes:** investigation of physicochemical properties of the elements, inorganic and coordination compounds based on chemical experiments.

### Bibliography of literature

#### A. Literature required to pass the course

1. *Chemistry of the Elements*, N. N. Greenwood, A. Earnshaw, Elsevier Science & Technology Books, 2005
2. *General chemistry*, Wendell H. Slabaugh, Thera D. Parsons, New York: John Wiley and Sons, 1966
3. *College chemistry : an introductory textbook of general chemistry*, Linus Pauling, Roger Hayward, San Francisco: W. H. Freeman and Company, 1950.
4. *General chemistry*, John H. Sechrist, Wendell H. Powers, Princeton, New Jersey : D. Van Nostrand Company, Inc., 1966
5. *Basic inorganic chemistry*, F. Albert Cotton, Geoffrey Wilkinson, New York: John Wiley & Sons, 1976.
6. *Inorganic chemistry*, Alan G. Sharpe, London : Longman Scientific Technical, New York : John Wiley & Sons, 1992
7. *Inorganic chemistry: an industrial and environmental perspective*, T. W. Swaddle, Thomas Wilson, San Diego: Academic Press, 1997

#### B. Extracurricular readings

1. *Problem exercises for general chemistry*, G. Gilbert Long, Forrest C. Hentz, New York: John Wiley & Sons, cop. 1978
2. *General chemistry: principles and structure*, James E. Brady, Gerard E. Humiston, SI version prepared by Henry Heikkinen, New York : John Wiley & Sons, 1982
3. *The chemistry of the rare-earth elements*, N. E. Topp, Amsterdam : Elsevier Publ. Co., 1965.

### Knowledge

Students know how to correctly write names, formulas chemical compounds.

Students know properties and application of elements from blocks s, p, d, f, respectively and complex inorganic structures.

Students are able to define the basic rules of safety and hygiene during inorganic chemistry reactions.

### Skills

Students plan and select the right equipment and measuring apparatus, conduct observations and simple chemical measurements and chemical experiments in inorganic chemistry, analyze the results and make conclusions based on them.

Students explain similarities and differences in properties of elements, relations between structure of substances and their properties; notice causal links in chemical processes performed in different conditions, where typical chemical reactions occur; explain course of different phenomena from everyday life with the use of chemical knowledge in correlation with other sciences; interpret information, formulates conclusions and explain opinions.

Students have skills of drawing correct conclusions based on available data from different sources, interpret and analyze information connected with chemistry presented as text, tables, plots, schemes, figures.

### Social competence

Students are aware of existing connections between the environment, industry and chemistry.

Students have the appropriate habits of work in the inorganic chemistry laboratory, in particular with toxic and caustic substances.

Students are acting in accordance with the principles of occupational health and safety. Students are able to identify their level of knowledge and skills and understand the necessity of life-long learning in organic chemistry and personal development.

