KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
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FUNDUSZ SPOŁECZNY

Course title	ECTS code
Inorganic chemistry	13.3.0965

Name of unit administrating study

Faculty of Chemistry

Studies

faculty	field of study		
Wydział Chemii	Chemia	type	pierwszego stopnia
		form	stacjonarne
		specialty	chemia biomedyczna, chemia kosmetyków, chemia żywności
		specialization	wszystkie

Teaching staff

dr hab. Dariusz Wyrzykowski; prof. UG, dr hab. Henryk Myszka; dr hab. Joanna Makowska, profesor uczelni; dr inż. Paulina Spisz; prof. dr hab. Ewa Siedlecka; dr inż. Krzysztof Żamojć; prof. dr hab. inż. Lech Chmurzyński; mgr Ola Grabowska; dr Aleksandra Tesmar; dr Aleksandra Bielicka-Giełdoń

Forms of classes, the realization and number of hours

Forms of classes

Auditorium classes, Laboratory classes, Lecture

The realization of activities

classroom instruction

Number of hours

Lecture: 30 hours, Laboratory classes: 30 hours, Auditorium classes: 15 hours

ECTS credits

8

classes - 75 h
tutorial classes – 25 h
student's own work – 100 h

Total: 200 h - 8 ECTS

The academic cycle

2022/2023 summer semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

- - calculations involving different aspects of inorganic chemistry
- chemical experiments, analysis of obtained results and discussion
- multimedia-based lecture

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

- Graded credit
- Examination

Assessment methods

- written exam with open questions
- written exam (test)

The basic criteria for evaluation

	Lecture: 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 Auditorium classes: 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 Lab classes: 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

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

none

B. Prerequisites

none

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, group14, 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, valence bond theory, hybridization and molecular geometry; molecular orbital theory; solid state bonds: ionic, covalent, metallic; metals, semiconductors and insulator; coordination compounds.

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

Bibliography of literature

Literature required to pass the course

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

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.

The learning outcomes (for the field of study and specialization)

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.

Contact

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