UNIWERSYTET IM. ADAMA MICKIEWICZA W POZNANIU

Basic Inorganic Chemistry 2

Educational subject description sheet

Basic information

Study programme Chemia (General Chemistry) **Speciality** - **Organizational unit** Faculty of Chemistry **Study level** First-cycle programme **Study form** Full-time **Education profile** General academic	**Didactic cycle** 2023/24 **Subject code** 02CENS.18K.01826.23 **Lecture languages** English **Course type** Obligatory **Block** Major subjects

Subject coordinator	Beata Dudziec
Lecturer	Beata Dudziec

Period	**Activities and hours**	**Number of ECTS points**
Semester 4	• Lecture: 30, Exam • Proseminar: 15, Graded credit • Laboratories: 75, Graded credit	7

Goals

Code	Goal
C1	Provide knowledge in the field of isolation, physical properties, structure, reactivity and applications of the main groups of elements and their most important compounds.
C2	Provide knowledge in the field of isolation, physical properties, structure, reactivity and applications of d-block metals and their most important compounds.
C3	Provide knowledge in the field of isolation, physical properties, structure, reactivity and applications of f-block metals (lanthanoids and actinoids) and their most important compounds.
C4	Provide knowledge on the health and safety rules in the inorganic chemistry laboratory and developing the ability of its use.
C5	Developing the ability of proper interpretation of research results and forming accurate conclusions.
C6	Developing the ability of preparation of reports on the basis of performed experiments.

Entry requirements

No prerequisites required.

Subject learning outcomes

Code	Outcomes in terms of	Learning outcomes	Examination methods
Knowledge – Student:			
W1	knows and understands the isolation methods, physical properties, structure, reactivity and applications of the main groups of elements and their most important compounds.	CEN_K1_W01, CEN_K1_W06, CEN_K1_W08, CEN_K1_W10	Written exam, Written colloquium, Test
W2	knows and understands the isolation methods, physical properties, structure, reactivity and applications of d-block elements and their most important compounds.	CEN_K1_W01, CEN_K1_W06, CEN_K1_W08, CEN_K1_W10	Written exam, Written colloquium, Test
W3	knows and understands the isolation methods, physical properties, structure, reactivity and applications of f-block elements (lanthanoids and actinoids) and their most important compounds.	CEN_K1_W01, CEN_K1_W06, CEN_K1_W08	Written exam, Written colloquium, Test
Skills – Student:			
U1	indicates the chemical properties of substances depending on their structure/composition, specifies and justifies the properties of substances on the basis of their structure.	CEN_K1_U03	Written exam, Written colloquium, Test
U2	defines, describes, plans and carries out basic synthetic reaction.	CEN_K1_U05	Written exam, Written colloquium, Test, Report
U3	can use chemical terminology consistent with the recommendations of IUPAC and PTChem.	CEN_K1_U01	Written exam, Written colloquium, Test, Report
U4	can use basic techniques in the inorganic chemistry laboratory.	CEN_K1_U18	Written exam, Report

Code	Outcomes in terms of	Learning outcomes	Examination methods
U5	interprets the results of laboratory work correctly, formulates conclusions on the basis of the performed experiments.	CEN_K1_U19	Written exam, Report
Social competences – Student:			
K1	is ready to apply health and safety rules in the laboratory of inorganic chemistry.	CEN_K1_K03	Report

Study content

No.	Course content	Subject learning outcomes	Activities
1.	Isolation methods, physical properties, structure, reactivity and applications of the main groups of elements and their most important compounds.	W1, U1, U2, U3	Lecture, Proseminar
2.	Isolation methods, physical properties, structure, reactivity and applications of the d-block elements and their most important compounds.	W2, U1, U2, U3	Lecture, Proseminar
3.	Isolation methods, physical properties, structure, reactivity and applications of the f-block elements (lanthanoids and actinoids) and their most important compounds.	W3, U1, U2, U3	Lecture, Proseminar
4.	Health and safety rules in the laboratory of inorganic chemistry.	K1	Laboratories
5.	Basic working techniques in the laboratory of inorganic chemistry.	U4	Laboratories
6.	Interpretation of research results, methods for the preparation of reports on the basis of performed experiments.	U5	Laboratories

Additional information

Activities	Teaching and learning methods and activities
Lecture	Lecture with a multimedia presentation of selected issues
Proseminar	Lecture with a multimedia presentation of selected issues, Discussion, Problem-based learning, Work in groups
Laboratories	Laboratory method

Activities	Credit conditions
Lecture	The condition for passing the exam is obtaining at least 50% of the maximum possible amount of points during written exam. Grade conditions: • excellent (A; 5.0) – achievement by the student of the assumed learning outcomes in a range of 90.0 - 100% • very good (B; 4.5) - achievement by the student of the assumed learning outcomes in a range of 80.0 - 89.9% • good (C; 4.0) - achievement by the student of the assumed learning outcomes in a range of 70.0 - 79.9% • satisfactory (D; 3,5) - achievement by the student of the assumed learning outcomes in a range of 60.0 - 69.9% • sufficient (E, 3.0) - achievement by the student of the assumed learning outcomes in a range of 50.0- 59.9% • fail (F; 2.0): failure to achieve the assumed learning outcomes, result below <50.0%
Proseminar	The conditions for passing the classes is attendance at a minimum of 13 out of 15 class hours (1 class hour = 45 minutes) and obtaining at least 50% of the maximum possible amount of points. Grade conditions: • excellent (A; 5.0) – achievement by the student of the assumed learning outcomes in a range of 90.0 - 100% • very good (B; 4.5) - achievement by the student of the assumed learning outcomes in a range of 80.0 - 89.9% • good (C; 4.0) - achievement by the student of the assumed learning outcomes in a range of 70.0 - 79.9% • satisfactory (D; 3.5) - achievement by the student of the assumed learning outcomes in a range of 60.0 - 69.9% • sufficient (E, 3.0) - achievement by the student of the assumed learning outcomes in a range of 50.0- 59.9% • fail (F; 2.0): failure to achieve the assumed learning outcomes, result below <50.0% When obtaining less than 50% of the maximum possible amount of points, the student is entitled to write a final test on all issues from this subject, enabling passing the classes and obtaining a sufficient grade (E, 3.0).
Laboratories	The conditions for passing the laboratory is attendance at a minimum of 14 out of 15 class hours and obtaining at least 60% of the maximum possible amount of points. Grade conditions: • excellent (A; 5.0) – achievement by the student of the assumed learning outcomes in a range of 92.0 - 100% • very good (B; 4.5) - achievement by the student of the assumed learning outcomes in a range of 84.0 - 91.9% • good (C; 4,0) - achievement by the student of the assumed learning outcomes in a range of 76.0 - 83.9% • satisfactory (D; 3.5) - achievement by the student of the assumed learning outcomes in a range of 68,0 -75.9% • sufficient(E, 3,0) - achievement by the student of the assumed learning outcomes in a range of 60.0 - 67.9% • fail (F; 2.0): failure to achieve the assumed learning outcomes, result below <60.0% When obtaining between 50.0 – 59.9% of the maximum possible amount of points, the student is entitled to write a final test on all issues from this subject, enabling passing the laboratories and obtaining a sufficient grade (E, 3.0).

Literature

Obligatory

1. J. D. Lee „Concise Inorganic Chemistry”. 5th Edition, Chapman and Hall Ltd., London, 1996
2. P. Atkins, T. Overton, J. Rourke, M. Weller, F. Armstrong, M. Hagerman „Inorganic Chemistry” 5th Ed.; Oxford University Press, 2010

Optional

1. C. E. Housecroft, A. G. Sharpe “Inorganic Chemistry”, 5th Ed.; Pearson Education Ltd., 2018

Calculation of ECTS points

Activities	**Activity hours***
Lecture	30
Proseminar	15
Laboratories	75
Preparation for classes	15
Reading the indicated literature	15
Preparation for the assessment	20
Preparation for the exam	40
Student workload	**Hours** 210
Number of ECTS points	**ECTS** 7

* academic hour = 45 minutes

Efekty uczenia się dla kierunku

Kod	Treść
CEN_K1_K03	The graduate is ready to correctly assessy the risks involved in conducting chemical experiments
CEN_K1_U01	The graduate can use basic chemical terminology according to IUPAC and PTChem recommendations
CEN_K1_U03	The graduate can identify and justify the properties of a substance on the basis of its structure
CEN_K1_U05	The graduate can carry out basic chemical synthesis processes
CEN_K1_U18	The graduate can perform a chemical and physicochemical experiment based on the description
CEN_K1_U19	The graduate can analyse and develop test results and prepare a final report on the chemical and physico-chemical experiments carried out
CEN_K1_W01	The graduate knows and understands basic chemical laws and issues
CEN_K1_W06	The graduate knows and understands structure of molecules and crystals
CEN_K1_W08	The graduate knows and understands the chemical properties of substances according to their structure/composition
CEN_K1_W10	The graduate knows and understands the basic processes of chemical synthesis