**KAPITAŁ LUDZKI**
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

**UNIA EUROPEJSKA**
EUROPEJSKI
FUNDUSZ SPOŁECZNY

| Course title | ECTS code |
|---|---|
| Monographic lecture - Modern technologies in industry | 13.3.1154 |

**Name of unit administrating study**

null

**Studies**

| faculty | field of study | type | drugiego stopnia |
|---|---|---|---|
| Wydział Chemii | Chemia | form | stacjonarne |
| | | specialty | chemia biomedyczna, analityka i diagnostyka chemiczna, chemia i technologia środowiska, chemia obliczeniowa |
| | | specialization | wszystkie |

**Teaching staff**

prof. dr hab. inż. Adriana Zaleska-Medynska; dr inż. Paweł Mazierski; dr inż. Anna Malankowska; dr inż. Joanna Nadolna; dr inż. Aleksandra Pieczyńska; dr hab. inż. Ewelina Grabowska-Musiał; dr inż. Anna Gołąbiewska

| Forms of classes, the realization and number of hours | ECTS credits |
|---|---|
| **Forms of classes** | 3 |
| Lecture | classes - 30 h |
| **The realization of activities** | tutorial classes – 10 h |
| classroom instruction | student's own work – 35 h |
| **Number of hours** | |
| Lecture: 30 hours | Total: 75 h - 3 ECTS |

**The academic cycle**

2023/2024 winter semester

| Type of course | Language of instruction |
|---|---|
| obligatory | polish |

| Teaching methods | Form and method of assessment and basic criteria for eveluation or examination requirements |
|---|---|
| multimedia-based lecture | **Final evaluation** |
| | Graded credit |
| | **Assessment methods** |
| | written exam: open questions (short written answer) |
| | **The basic criteria for evaluation** |
| | • positive mark from the written exam covering the issues listed in the program content of the lecture, the scale according to the UG Study Regulations |
| | • oral exam - supplement of the written exam, but only for those students who obtained from the written test > 40% of the points possible to receive |

**Method of verifying required learning outcomes**

**Required courses and introductory requirements**

A. Formal requirements

basics of general chemistry

B. Prerequisites

**Aims of education**

Familiarize students with the issues listed in the program content of the lecture

**Course contents**

Subjects of the lecture:
1. Pharmaceutical industry
2. Production of pesticides (crop protection chemicals)

3. Application of the stopped-flow technique in industry

4. Production of hydrogen, including biohydrogen

5. Hydrogen storage and transport

6. Gas separation techniques and porous materials for gas separation

7. Techniques of separation, conversion and storage of CO2

8. Production of photovoltaic cells

9. Production and recycling of lithium-ion batteries

10. New generation batteries

11. Paints and varnishes

12. Other protective layers

13. Glass production technologies

14. Porcelain production technologies

15. Wood and paper industry

## Bibliography of literature

Literature required to pass the course

Scientific publications / books on the discussed issues - a list updated and given during lectures

Extracurricular readings

Selected individually by the student depending on the selected issues

| The learning outcomes (for the field of study and specialization) | Knowledge |
| --- | --- |
| | defines and presents modern technologies. |
| | describes, illustrates and explains functioning of modern technologies. |
| | characterizes the basic parameters of modern technologies work. |
| | uses the basic technological and chemical concepts describing the process of obtaining catalysts, radioactive isotopes, biohydrogen, photovoltaic cells, API and lithium-ion batteries. |
| | discusses the advantages and disadvantages of the production and use of energy from renewable sources. |
| | **Skills** |
| | In a clear way, both in speech and in writing, present correct technological reasoning |
| | **Social competence** |
| | understands the functioning of modern technologies |
| | understands the importance of further education |
| | is aware of the dangerous caused by degradation of the natural environment and understand the importance of the improving technology. |
| | Student demonstrates creativity in individual and teamwork and keeps open to the suggestions of the teacher and other team members. |

## Contact

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