

Master seminar - didactic laboratory of physical and theoretical chemistry

Educational subject description sheet

Basic information

| | | |
|---|---|---|
| Study programme Chemistry Speciality - Organizational unit Faculty of Chemistry Study level Second-cycle programme Study form Full-time Education profile General academic | | Didactic cycle 2023/24 Subject code 02CHSS.2EP.01282.23 Lecture languages English Course type Elective Block Basic subjects |
| Subject coordinator | Renata Jastrzb, Marcin Podsiado | |
| Lecturer | Renata Jastrzb, Marcin Podsiado | |
| Period Semester 2 | Activities and hours • Seminar: 30, Graded credit | Number of ECTS points 5 |
| Period Semester 3 | Activities and hours • Seminar: 30, Graded credit | Number of ECTS points 5 |
| Period Semester 4 | Activities and hours • Seminar: 30, Graded credit | Number of ECTS points 5 |

Goals

| Code | Goal |
|------|--|
| C1 | Develop the ability to apply the acquired theoretical knowledge to experimental work in physical and theoretical chemistry. |
| C2 | Develop the ability to use chemical literature and databases, also in English, in the field of physical and theoretical chemistry. |
| C3 | Develop the ability to work independently on a given subject in the field of physical and theoretical chemistry, including making calculations and selecting laboratory methods. |
| C4 | Develop the ability to write scientific papers, present information and data, use literature sources, databases and patents. |
| C5 | Learning methods of data analysis appropriate to the issue to be solved, interpreting the results obtained, drawing conclusions. |
| C6 | Acquaintance with the methodology of writing a master's thesis and the forms of disseminating its results (master's thesis, conference presentation, scientific publication). |
| C7 | Acquiring the ability to present experimental results (oral presentation, poster) and to discuss a given topic. |
| C8 | Ability to write a longer study describing the results of the experimental work, taking into account literature data. |

Entry requirements

No prerequisites required.

Subject learning outcomes

| Code | Outcomes in terms of | Learning outcomes | Examination methods |
|-----------------------------|--|--|---------------------|
| Knowledge - Student: | | | |
| W1 | knows and understands the research methods and apparatus used in the experiments for the master's thesis carried out in the physical and theoretical chemistry laboratory. | CHS_K2_W01, CHS_K2_W04, CHS_K2_W09 | Project |
| W2 | knows and understands the latest scientific developments relating to the research topic within his/her Master's thesis in physical and theoretical chemistry. | CHS_K2_W01, CHS_K2_W02, CHS_K2_W03, CHS_K2_W04 | Project |
| W3 | knows and understands methods of data analysis appropriate to the problem being solved in physical and theoretical chemistry. | CHS_K2_W01, CHS_K2_W02, CHS_K2_W08 | Project |
| Skills - Student: | | | |
| U1 | is able to read with comprehension a scientific text, also in English, related to the subject of the master's thesis in physical and theoretical chemistry. | CHS_K2_U01, CHS_K2_U02, CHS_K2_U12, CHS_K2_U13, CHS_K2_U14 | Project |

| Code | Outcomes in terms of | Learning outcomes | Examination methods |
|--------------------------------------|---|--|---------------------|
| U2 | is able to use literature sources, databases and patents and read with comprehension a scientific text related to the topic of the master's thesis on physical and theoretical chemistry. | CHS_K2_U01, CHS_K2_U02, CHS_K2_U12, CHS_K2_U13, CHS_K2_U14 | Project |
| U3 | is able to prepare and deliver a paper directly related to his/her studies and to speak in a scientific discussion. | CHS_K2_U01, CHS_K2_U02, CHS_K2_U13 | Project |
| U4 | is able to prepare a scientific presentation on the theory and design of the research, the current state of knowledge, the research thesis, the apparatus used and the interpretation and discussion of the results obtained. | CHS_K2_U01, CHS_K2_U12, CHS_K2_U13 | Project |
| Social competences - Student: | | | |
| K1 | is willing/ready to discuss the professional ethics of a chemist and to lead a discussion on ongoing research. | CHS_K2_K01, CHS_K2_K03, CHS_K2_K04 | Project |

Study content

| No. | Course content | Subject learning outcomes | Activities |
|-----|---|---------------------------|------------|
| 1. | Familiarisation with working on specialised databases. | W1, W2, W3, U1, U2 | Seminar |
| 2. | Finding solutions to scientific problems using specialised databases and an Internet search engine. | W1, W2, U2 | Seminar |
| 3. | Issues of ethics and plagiarism in research and academic studies, e.g. in master's theses, scientific articles. | U3, U4, K1 | Seminar |
| 4. | Methodology for planning scientific experiments and critically interpreting their results. | W2, W3, U2, U3, U4 | Seminar |
| 5. | Methodology for the preparation of scientific studies, including the master's thesis. | U3, U4, K1 | Seminar |
| 6. | Ways of presenting direct results (preparing and delivering presentations) and leading scientific discussions. | U3, U4, K1 | Seminar |

Additional information

Semester 2

| Activities | Teaching and learning methods and activities |
|------------|---|
| Seminar | Discussion, Work with text, Solving tasks (e.g. computational, artistic, practical), Research method (scientific inquiry), Project method, Demonstration and observation, Activating method - "brainstorming" |

| Activities | Credit conditions |
|------------|--|
| Seminar | <p>A prerequisite for passing is the preparation and presentation of issues related to the subject of the study in progress.</p> <p>Grading scale with applied percentage distribution:</p> <ul style="list-style-type: none"> • excellent (5.0): achievement of the student's expected learning outcomes at a minimum of 90.0%. • very good (4.5): achievement by the student of the desired learning outcomes ranging from 80.0% - 89.9%. • good (4.0): achievement of student learning outcomes 70.0% - 79.9%. • average (3.5): achievement of student learning outcomes 60.0% - 69.9%. • satisfactory (3.0): attainment of the student learning outcomes within 50.0% - 59.9%. • unsatisfactory (2.0): failure of the student to achieve the expected learning outcomes below 50.0%. |

Semester 3

| Activities | Teaching and learning methods and activities |
|------------|---|
| Seminar | Discussion, Work with text, Solving tasks (e.g. computational, artistic, practical), Research method (scientific inquiry), Project method, Demonstration and observation, Activating method - "brainstorming" |

| Activities | Credit conditions |
|------------|--|
| Seminar | <p>A prerequisite for passing is the preparation and presentation of issues related to the subject of the study in progress.</p> <p>Grading scale with applied percentage distribution:</p> <ul style="list-style-type: none"> • excellent (5.0): achievement of the student's expected learning outcomes at a minimum of 90.0%. • very good (4.5): achievement by the student of the desired learning outcomes ranging from 80.0% - 89.9%. • good (4.0): achievement of student learning outcomes 70.0% - 79.9%. • average (3.5): achievement of student learning outcomes 60.0% - 69.9%. • satisfactory (3.0): attainment of the student learning outcomes within 50.0% - 59.9%. • unsatisfactory (2.0): failure of the student to achieve the expected learning outcomes below 50.0%. |

Semester 4

| Activities | Teaching and learning methods and activities |
|------------|---|
| Seminar | Discussion, Work with text, Solving tasks (e.g. computational, artistic, practical), Research method (scientific inquiry), Project method, Demonstration and observation, Activating method - "brainstorming" |

| Activities | Credit conditions |
|------------|--|
| Seminar | <p>A prerequisite for passing is the preparation and presentation of issues related to the subject of the study in progress.</p> <p>Grading scale with applied percentage distribution:</p> <ul style="list-style-type: none"> • excellent (5.0): achievement of the student's expected learning outcomes at a minimum of 90.0%. • very good (4.5): achievement by the student of the desired learning outcomes ranging from 80.0% - 89.9%. • good (4.0): achievement of student learning outcomes 70.0% - 79.9%. • average (3.5): achievement of student learning outcomes 60.0% - 69.9%. • satisfactory (3.0): attainment of the student learning outcomes within 50.0% - 59.9%. • unsatisfactory (2.0): failure of the student to achieve the expected learning outcomes below 50.0%. |

Literature

Obligatory

1. Literature indicated by the MSc physical and theoretical chemistry supervisor

Calculation of ECTS points

Semester 2

| Activities | Activity hours* |
|----------------------------------|---------------------|
| Seminar | 30 |
| Reading the indicated literature | 30 |
| Preparation of a diploma thesis | 30 |
| Preparation of a project | 40 |
| Report preparation | 15 |
| Student workload | Hours 145 |
| Number of ECTS points | ECTS 5 |

* academic hour = 45 minutes

Semester 3

| Activities | Activity hours* |
|----------------------------------|-----------------|
| Seminar | 30 |
| Reading the indicated literature | 30 |
| Preparation of a diploma thesis | 30 |

| | |
|------------------------------|---------------------|
| Preparation of a project | 45 |
| Report preparation | 15 |
| Student workload | Hours 150 |
| Number of ECTS points | ECTS 5 |

* academic hour = 45 minutes

Semester 4

| Activities | Activity hours* |
|--|---------------------|
| Seminar | 30 |
| Reading the indicated literature | 30 |
| Preparation of a diploma thesis | 30 |
| Preparation of a project | 45 |
| Preparation of a multimedia presentation | 15 |
| Student workload | Hours 150 |
| Number of ECTS points | ECTS 5 |

* academic hour = 45 minutes

Efekty uczenia się dla kierunku

| Kod | Treść |
|------------|---|
| CHS_K2_K01 | The graduate is ready to identify and evaluate cognitive and practical problems in the field of chemical research |
| CHS_K2_K03 | The graduate is ready to propose alternative solutions aimed at responsible decision-making, taking into account economic and social factors |
| CHS_K2_K04 | The graduate is ready to appreciating, promoting and adhering to professional ethics in their own and others' activities |
| CHS_K2_U01 | The graduate can use chemical terminology consistent with IUPAC recommendations |
| CHS_K2_U02 | The graduate can analyze the physicochemical properties of substances based on the selection of appropriate methods and tools |
| CHS_K2_U12 | The graduate can draw conclusion properly and evaluate critically on the basis of data from self-conducted chemical or physicochemical experiments and literature resources |
| CHS_K2_U13 | The graduate can deepens his specialistic knowledge to the extent necessary to solve and interpret the undertaken problem correctly |
| CHS_K2_U14 | The graduate can express in an accessible way the acquired knowledge, conduct a debate and present the results of scientific projects in chemistry |
| CHS_K2_W01 | The graduate knows and understands selected advanced issues in the field of chemistry |
| CHS_K2_W02 | The graduate knows and understands concepts and relationships allowing for a quantitative description of complex physico-chemical phenomena |
| CHS_K2_W03 | The graduate knows and understands mechanisms of advanced chemical reactions and indicates their interrelationship and importance in science |
| CHS_K2_W04 | The graduate knows and understands physico-chemical properties of chemical compounds and materials depending on their structure / composition |
| CHS_K2_W08 | The graduate knows and understands advanced chemical technology processes |
| CHS_K2_W09 | The graduate knows and understands the ethical, legal and economic conditions applicable in the field of chemical sciences |