

Learning outcomes of the programme:

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| 1. | Field of study | Chemistry |
| 2. | Academic year of entry | 2015/2016 (winter term) |
| 3. | Level of qualifications/degree | second-cycle studies |
| 4. | Degree profile | general academic |

| Code of the learning outcome of the programme | Learning outcomes The graduate: | Codes of the learning outcomes of the areas of education to which the learning outcome of the programme is related |
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| KNOWLEDGE | | |
| CH_W01 | has extensive knowledge of chemistry, its history, significance for the development of the exact sciences, learning about the world and the history of humanity | X2A_W01 |
| CH_W02 | has advanced knowledge of such chemistry disciplines as analytical chemistry, physical chemistry, theoretical chemistry, inorganic chemistry | X2A_W01 |
| CH_W03 | has extensive knowledge with regard to modern measurement technologies applied in chemical analysis, in particular chromatography | X2A_W01 |
| CH_W04 | has extensive knowledge with regard to modern measurement technologies applied in chemical analysis, in particular chromatography | X2A_W01 |
| CH_W05 | is able to explain the advanced notions of X-Ray crystallography, electronography and neutronography | X2A_W01 |
| CH_W06 | has advanced knowledge in the area of the major and specialization | X2A_W01 |
| CH_W07 | knows higher mathematics to a degree that enables understanding, description and modelling of medium complexity chemical processes | X2A_W02, X2A_W03 |
| CH_W08 | knows the notions of chemoinformatics and is able to enumerate chemoinformatic methods applied in the data analysis | X2A_W04 |
| CH_W09 | knows selected advanced calculation techniques used to solve typical problems in the area of chemistry | X2A_W04 |
| CH_W10 | knows specialist IT tools in order to assess, in terms of statistics, the experimental outcomes and calculations and to prepare presentations | X2A_W04 |
| CH_W11 | knows the theoretical basics of operating measurement instruments | X2A_W05 |
| CH_W12 | has general knowledge of the current development trends and recent discoveries in the area of chemistry | X2A_W06 |
| CH_W13 | knows the basic health and safety principles indispensable when preparing their own (measurement) stand allowing for independent research | X2A_W07 |
| CH_W14 | knows and is able to explain the legal and ethical aspects related to protection of intellectual property, industrial property and copyright law as well as the necessity to manage the resources of intellectual property, is able to use the sources of patent information | X2A_W08, X2A_W09, X2A_W10 |
| CH_W15 | has an in-depth knowledge of selected scientific methods and knows the issues characteristic for the scientific discipline not related to the programme | |
| SKILLS | | |
| CH_U01 | is able to indicate proper conditions for the chromatographic separation of simple chemical substances | X2A_U01 |
| CH_U02 | is able to determine the structure, spectral characteristic and properties of chemical compounds in various states of aggregation of matter and describes the chemical reactions in the light of theoretical chemistry | X2A_U01 |
| CH_U03 | consciously deepens the knowledge of the chosen major and specialization | X2A_U04, X2A_U07 |
| CH_U04 | plans and conducts basic scientific research in the area of chemistry | X2A_U01 |
| CH_U05 | is able to select the method and instruments necessary in order to conduct a specific chemical analysis taking into account economic aspects | X2A_U01 |
| CH_U06 | applies selected spectroscopic methods to determine the structure of chemical compounds and interpret the spectrum of non-complex molecular systems | X2A_U01 |
| CH_U07 | is able to solve problems related to the structure, reactivity and interactions of molecules | X2A_U01 |
| CH_U08 | determines the structure of simple particles with the use of methods of molecular mechanics and quantum chemistry | X2A_U01 |
| CH_U09 | is able to apply the acquired methods in order to obtain monocrystals | X2A_U01 |
| CH_U10 | prepares samples for research purposes and applies diffraction to solve analytical, identification and structural problems | X2A_U01 |
| CH_U11 | searches for the information in the structural databases | X2A_U01 |

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| CH_U12 | applies simple molecule editors | X2A_U04 |
| CH_U13 | analyses data with the use of chemoinformatic/chemometric methods | X2A_U01 |
| CH_U14 | develops and critically examines their research outcomes | X2A_U02 |
| CH_U15 | is able to find the information indispensable for a specific purpose in the professional literature, databases and other sources | X2A_U03 |
| CH_U16 | is able to draw conclusions on the basis of literature data and critically examine these data | X2A_U03 |
| CH_U17 | relates to national and international scientific journals in the area of chemistry | X2A_U03 |
| CH_U18 | is able to associate information from various branches of chemistry and related sciences, is able to explain selected problems in the area of biology, environmental protection, pharmacy and medicine | X2A_U04 |
| CH_U19 | is able to explain in speech and writing their own and others' research outcomes | X2A_U01, X2A_U02, X2A_U05 |
| CH_U20 | justifies and describes the purpose of the research conducted, its methodology and significance | X2A_U05 |
| CH_U21 | is able to explain in speech and writing popular scientific issues concerning the outcomes of scientific discoveries in the area of chemistry and related sciences | X2A_U06 |
| CH_U22 | independently acquires knowledge of specific issues and determines the directions of their education | X2A_U07 |
| CH_U23 | prepares written assignments in the area of chemistry and/or other related sciences including the purpose, methodology of research, its outcomes and significance in the context of related research | X2A_U08 |
| CH_U24 | prepares and performs presentations in Polish and English concerning the issues in chemistry and related sciences of popular scientific and specialist nature | X2A_U09 |
| CH_U25 | uses the English language to a degree necessary to peruse professional literature; is able to communicate in the English language at B2+ level | X2A_U10 |
| CH_U26 | plans their research necessary to challenge the hypotheses contained in Master's thesis | X2A_U01, X2A_U02, X2A_U05 |
| CH_U27 | applies principles of sustained development while conducting research, acts in compliance with health and safety principles and handles chemicals with caution | X2A_U01 |
| CH_U28 | is able to operate the specialist measurement instruments and software (in case of theoretical work) in order to obtain research outcomes for the purposes of the Master's thesis | X2A_U01, X2A_U02, X2A_U03 |
| CH_U29 | is able to identify and conduct analysis, at an advanced level, of problems on the basis of the information obtained in the course of studying a discipline not related to the chosen programme | |
| SOCIAL COMPETENCES | | |
| CH_K01 | is aware of their knowledge and understands the necessity of life-long learning | X2A_K01, X2A_K07 |
| CH_K02 | is able to inspire and organise the learning process of others | X2A_K01 |
| CH_K03 | demonstrates responsibility for the entrusted scope of research, for their own work and the work of others | X2A_K02, X2A_K06 |
| CH_K04 | is aware of the responsibility for the jointly undertaken assignment related to teamwork | X2A_K02 |
| CH_K05 | understands the necessity of systematic work over long-term projects | X2A_K02, X2A_K03, X2A_K04 |
| CH_K06 | understands the significance of intellectual integrity and acts ethically | X2A_K04 |
| CH_K07 | is responsible for the safety of their work and the work of others | X2A_K04, X2A_K06 |
| CH_K08 | is used to consult objective sources of scientific information and applies the principles of critical thinking while solving practical problems | X2A_K05 |
| CH_K09 | is able to critically approach the information disseminated in the media, in particular concerning the exact sciences | X2A_K04, X2A_K06 |
| CH_K10 | understands the necessity to popularise the research outcomes and the selected chemistry issues | X2A_K04, X2A_K06 |
| CH_K11 | plans their professional and scientific career | X2A_K07 |
| CH_K12 | understands the necessity of an interdisciplinary approach towards the problems solved, integrates the knowledge of various disciplines and practices self-education with the view to deepening the knowledge gained | |