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| Course title: | Assessment of bioavailability of elements in soils |
| Course title in Polish: | Ocena biodostępności pierwiastków w glebach |
| Course for discipline: | Agriculture and Horticulture |

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| Semester: | 5 | Status of course: | faculty | Language: | english |
| Academic year: | 2027/2028 | Catalog number: | 43/2025/26 | | |

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| Coordinator of course: | dr hab. Jerzy Jonczak, prof. WULS |
| Lecturer od course: | dr hab. Jerzy Jonczak, prof. WULS |
| Executing unit: | Institute of Agriculture, Department of Soil Science |
| Ordering unit: | Doctoral School SGGW |
| Assumptions, goals and description of the course: | The purpose of this course is to familiarize PhD students with chosen methods of assessment of bioavailability of macro- and micro-elements in soils. During the course will be presented commonly used methods, including their assumptions, technical aspects of analysis, and interpretation of the obtained data. |
| Didactic form, number of hours: | laboratory exercises, 15h |
| Teaching methods: | laboratory analysis of samples |
| Limit of people in the group: | 6 |

Learning outcomes

| KNOWLEDGE - the graduate knows and understands: | SKILLS - the graduate is able to: | COMPETENCES - the graduate is ready to: |
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| To the extent enabling to revise the existing paradigms in the field/discipline - the world achievements, gathering theoretical background as well as general and selected detailed issues | Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline | Critically evaluate the achievements in the field/discipline represented |
| Major general development trends in the field/discipline | | Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect |
| | | Support the ethos of scientific circles and conduct independent research |
| The method of verification of learning outcomes: | test | |
| Form of documentation of achieved learning outcomes: | test | |
| Elements and weights of the final grade: | result of the test: 100% | |
| Place of the course: | Department of Soil Science | |
| Basic and supplementary literature | | |
| Cygański A. 2022. Metody spektroskopowe w chemii analitycznej. WNT, Warszawa | | |
| Comments: | | |

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| Estimated number of hours of work of the doctoral student necessary to achieve the assumed learning outcomes: | 45 |
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| Learning outcomes reference to the second degree characteristics of the National Qualification Framework (level 8) covering doctoral competences: | | |
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| Symbol: | Learning outcomes: | 8 level NQF |
| SD1_KW01 | To the extent enabling to revise the existing paradigms in the field/discipline - the world achievements, gathering theoretical background as well as general and selected detailed issues | P8S_WG |
| SD1_KW02 | Major general development trends in the field/discipline | P8S_WG |
| SD1_KU05 | Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline | P8S_UW |
| SD1_KK01 | Critically evaluate the achievements in the field/discipline represented | P8S_KK |
| SD1_KK03 | Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect | P8S_KK |
| SD1_KK08 | Support the ethos of scientific circles and conduct independent research | P8S_KR |