# Syllabus

## *Descrizione corso*

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| **Titolo insegnamento** | Chimica e fertilità del suolo |
| **Codice insegnamento** | 40190 |
| **Titolo aggiuntivo** | |
| **Settore Scientifico-Disciplinare** | AGRI-06/B |
| **Lingua** | Tedesco |
| **Corso di Studio** | Corso di laurea in Scienze agrarie, degli alimenti e dell'ambiente montano |
| **Altri Corsi di Studio (mutuati)** | |
| **Docenti** | prof. Tanja Mimmo,<br>Tanja.Mimmo@unibz.it<br>https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/26968 |
| **Assistente** | |
| **Semestre** | Primo semestre |
| **Anno/i di corso** | 2 |
| **CFU** | 6 |
| **Ore didattica frontale** | 40 |
| **Ore di laboratorio** | 20 |
| **Ore di studio individuale** | 90 |
| **Ore di ricevimento previste** | 18 |
| **Sintesi contenuti** | The course provides an introduction to the fundamentals of soil chemistry. Topics include soils as natural bodies and soil formation, inorganic and organic components, weathering processes, as well as the properties of soil water, soil air, and the soil solution. Key chemical processes such as sorption, ion exchange, buffering, and redox reactions are discussed. The course also covers soil fertility, nutrients, fertilizers, and soil amendments, alongside methods of soil sampling and analysis. Finally, attention is given to the rhizosphere as the interface between soil and plants. |

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| **Argomenti dell'insegnamento** | The course covers the following topics:<br>• Introduction to the soil environment including soil formation processes<br>• Soil minerals and rocks<br>• Weathering processes in soil (chemical, physical and biological weathering)<br>• Soil air and water<br>• Soil organic matter<br>• Soil solution – chemical properties and processes within soils: Sorption, Ion exchange, cation exchange capacity, anion exchange capacity; soil pH, buffer systems, redox – potential.<br>• Soil fertility – the soil as a plant nutrient medium<br>• Fertilizers and soil amendments<br>• Macronutrients<br>• Micronutrients<br>• Soil sampling and interpretation of soil tests<br>• The Rhizosphere – properties and methods applied in rhizosphere research |
| **Parole chiave** | Soil formation, soil degradation, minerals, weathering, soil water, soil air, organic matter, sorption, ion exchange, buffering, redox processes, soil fertility, nutrients, fertilization, rhizosphere. |
| **Prerequisiti** | |
| **Insegnamenti propedeutici** | no |
| **Modalità di insegnamento** | lectures, laboratory and field activities |
| **Obbligo di frequenza** | no |
| **Obiettivi formativi specifici e risultati di apprendimento attesi** | Knowledge and understanding of chemical, physical and biochemical processes within the soil-plant system related to the development and maintenance of soil fertility.<br>Capability in applying knowledge by developing practical laboratory skills and the ability to draw information out of practical laboratory activities in support/integration to the theoretical lessons<br>Making judgments based on the choice of analytical protocols, writing a report<br>Capability in presentation of the skills acquired with an appropriate language and use of technical and specific terms by preparing a short seminar on a selected topic<br>Acquisition of learning strategies based on the use of technical information, knowledge updating and selection of scientific |

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| | literature. |
| **Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)** | |
| **Modalità di esame** | The examination will be conducted as an oral individual exam. The focus will be on comprehension questions as well as the ability to explain key concepts and demonstrate connections between different topics. |
| **Criteri di valutazione** | Subject knowledge: accurate and differentiated presentation of the content<br><br>Understanding: ability to identify and explain interrelationships between topics<br><br>Argumentation skills: clear and logically structured reasoning<br><br>Language precision: appropriate use of technical terminology |
| **Bibliografia obbligatoria** | No compulsory literature is specified for this course |
| **Bibliografia facoltativa** | Scheffer, F., & Schachtschabel, P. (2018). *Lehrbuch der Bodenkunde* (17. Aufl.). Springer Spektrum. |
| **Altre informazioni** | |
| **Obiettivi di Sviluppo Sostenibile (SDGs)** | Sconfiggere la fame, Buona salute, Utilizzo sostenibile della terra, Città e comunità sostenibili, Lotta contro il cambiamento climatico, Acqua pulita e servizi igenico-sanitari |