






3.00 credits

22.5 h + 7.5 h

Q2

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| Teacher(s) | Bielders Charles (coordinator) ;Delvaux Bruno ; |
| Language : | French |
| Place of the course | Louvain-la-Neuve |
| Main themes | <p>1 Soil forming processes and pedological processes in tropical regions (inter-tropical and Mediterranean areas): alteration complex and major constituents, identification of major soil types and their constituents (WRB system).</p> <p>2 Relations between constituents and properties: analysis of surface properties and charge through the study of permanent and variable charge models; implications for physical and physico-chemical soil properties.</p> <p>3 Diagnosis of major soil constraints in warm regions: mineral reserves, humus stocks, acidity, salinity, nutrient depletion, mass recovery, compaction, erosion, water availability: derive constraints from the knowledge of constituents-properties relationships.</p> <p>4 Remediation and management techniques, viewed through some major cropping systems and soil types.</p> |
| Learning outcomes | <p>At the end of this learning unit, the student is able to :</p> <p>a. Contribution de l'activité au référentiel AA (AA du programme) M1.2 ; M1.4 ; M2.2 ; M2.4 ; M6.5</p> <p>b. Formulation spécifique pour cette activité des AA du programme :</p> <p>1 At the end of the course, , on the basis of case studies, students should be able to:</p> <ul style="list-style-type: none"> - Integrate morphological, mineralogical and physico-chemical properties of soils, in order to diagnose the functioning of soils of warm regions and to identify constraints - Establish appropriate soil management and remediation practices adapted to soil, climate and socio-economic conditions |
| Evaluation methods | Written exam : theoretical questions and analysis of case study |
| Teaching methods | <ul style="list-style-type: none"> - Classes, illustrated by case studies - Case study analyses |
| Content | <p>Four topics will be addressed :</p> <p>Part I ' Soil forming processes and pedological processes in warm regions : use of phase diagrams (stability, solubility), recognition of major soil types via the interpretation of morphological and analytical data of typical soil profiles.</p> <p>Part II - Relations between constituents and properties: study of permanent and variable charge models, isoelectric point and point of zero charge, retention of cations and anions, phosphate adsorption, carbon storage, micro-aggregation, implications for physical and physicochemical properties of the soils .</p> <p>Part III - Diagnosis of major soils in tropical regions: determinants of fertility, estimates of stocks of humus and nutrients, diagnosis of constraints (nutrient depletion, acidity, salinity') and physical degradation (hard setting, compaction, erosion) based on morphological and analytical data.</p> <p>Part IV - Techniques of remediation and management viewed through some major cropping systems and soil types (case studies)</p> |
| Inline resources | Moodle |
| Bibliography | <p>Ouvrage de référence :</p> <ul style="list-style-type: none"> - 'Soils of the tropics' de A. Van Wambeke |
| Faculty or entity in charge | AGRO |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Master [120] in Agricultural Bioengineering | BIRA2M | 3 | |  |
| Master [120] in Environmental Bioengineering | BIRE2M | 3 | |  |
| Master [120] in Forests and Natural Areas Engineering | BIRF2M | 3 | |  |
| Master [120] in Agriculture and Bio-industries | SAIV2M | 3 | |  |
| Advanced Master in Environmental Sciences and Management in Developing Countries | SGED2MC | 3 | |  |