

3.0 credits

22.5 h + 7.5 h

1q

Teacher(s) :	Delfosse Thomas (compensates Delvaux Bruno) ; Biolders Charles (coordinator) ; Delvaux Bruno ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<p>Four themes will be addressed:</p> <p>1 soil forming processes and pedological processes under warm climates (intertropical and Mediterranean zones): major constituents, weathering complexes, identification of the main types of soils and their composition (WRB system).</p> <p>2 Relationship between the constituents and soil properties: analysis of surface and charge properties through the study of permanent and variable charge models; implications for the physical and physico-chemical properties of soil.</p> <p>3 Diagnosis of major soil of warm regions: mineral reserve, carbon stocks, acidity, salinity, nutrient mining, hardsetting, compaction, erosion, available water.: interpreting soil constraints on the basis of the relationship between the constituents and soil properties.</p> <p>4 Techniques of remediation and management, seen through a few major cropping systems.</p>
Aims :	<p>The aim of this course is to understand the relationship between soil constituents and soil properties in warm regions, to deduce from these the functional principles of soils and to apply them for optimal management of land resources for agricultural production in these regions.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> - Integrated knowledge of the functioning of soils of warm regions, based on soil constituent-soil properties relationships and their impacts on the physical, physico-chemical and biological properties of the soil in these regions. <p>Know-how:</p> <ul style="list-style-type: none"> - Integrating the morphological, mineralogical and physico-chemical properties of soils to diagnose their functioning, - Identify their constraints and specify their management (cropping systems, sequences) - Propose management and remediation practices <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Content :	<p>Four topics will be discussed:</p> <p>Part I: The processes of soil formation and pedological processes in warm regions. Use of phase diagrams (stability, solubility); recognition of the main types of soils through the interpretation of morphological data and analytical profiles.</p> <p>Part II: Relationships between soil constituents and soil properties. Permanent and variable charge models; isoelectric point and point of zero net charge, retention of anions and cations; phosphate adsorption, carbon storage, micro-aggregation: implications for the physical and physico-chemical properties of soil.</p> <p>Part III: Diagnosis of major constraints of soils of warm regions. Déterminants of fertility, estimates of stocks of humus and nutrients, diagnosis of constraints (leaching, acidity, salinity) and physical degradation (hardsetting, compaction, erosion) on the basis of morphological and analytical data.</p> <p>Part IV: Techniques of remediation and management. Techniques seen through some major cropping systems (case studies): irrigated rice, intensive banana systems, subsistence farming in the Sahel zone, irrigation in the Mediterranean, nutrient management in highly weathered soils.</p>
Other infos :	<p>Prerequisites : Soil Sciences (mandatory), applied pedology (recommended)</p> <p>Evaluation : written exam</p> <p>Support Book : "Soils of the Tropics: properties, appraisal and management", lecture notes</p>
Cycle and year of study :	<p>> Master [120] in Agricultural Bioengineering</p> <p>> Master [120] in Environmental Bioengineering</p> <p>> Master [120] in Forests and Natural Areas Engineering</p>
Faculty or entity in charge:	AGRO