

AGX4356 Soil Science

Level	4
Course Code	AGX4356
Course Title	Soil Science
Credit value	3
Core/Optional	Core
Course Aim/s	To provide basic knowledge on soils and its impact on plant growth
Course Learning Outcomes (CLO):	<p>After completion of this course student will be able to:</p> <p>CLO1: Identify the physiological processes in plants to describe the role of soil. [PLO1]</p> <p>CLO2: Describe the fundamental concepts related to rock formation, rock weathering, and soil formation. [PLO1][PLO2][PLO5]</p> <p>CLO3: Understand the importance of implications in management practices for different cropping systems based on the soil types in Sri Lanka. [PLO9][PLO10]</p> <p>CLO4: Identify the soil types of Sri Lanka based on the physical, chemical, and biological properties of the soil. [PLO12]</p> <p>CLO5: Describe the relation of soil properties into plant growth. [PLO6][PLO7]</p> <p>CLO6: Identify the importance of nutrient cycling in ecosystems. [PLO4][PLO5]</p> <p>CLO7: Apply the fertilizer recommendations for different crops based on the soil types.[PLO12]</p> <p>CLO8: Describe the basic phenomenon of soil transformation processes occur during the organic fertilizer formation. [PLO8][PLO9]</p>
Content (Main topics, sub topics)	<p>Outline Syllabus:</p> <p>Unit 1: Soil Development</p> <p> Session 1: Introduction to Soils</p> <p> Session 2: Soil Constituents</p> <p> Session 3: Classification of Soils in Sri Lanka</p> <p> Session 4: Materials for Soil Development</p> <p> Session 5: Processes of Soil Development</p> <p>Unit 2: Soil Properties</p> <p> Session 6: Physical Properties of Soil</p> <p> Session 7: Mineralogy of Soil Clay</p> <p> Session 8: Physico-Chemical Properties of Soil</p> <p> Session 9: Biological Properties of Soil I</p> <p> Session 10: Biological Properties of Soil II</p>

Unit 3: Soil Nutrients for Plants

Session 11: Nitrogen for Plants

Session 12: Phosphorous for Plants

Session 13: Potassium for Plants

Session 14: Secondary Nutrients for Plants (Calcium, Magnesium, Sulphur)

Session 15: Micronutrients for Plants

Session 16: Chemical Fertilizers

Session 17: Organic Fertilizers

Session 18: Soil Amendments

Session 19: Sexual and Asexual propagation of plants

Laboratory work:

1. Identification of rocks, soil sampling equipment, and determination of soil colors
2. Determination and comparison of organic carbon in different types of soils
3. Identification of fertilizers and calculation of fertilizer requirements for different crops, comparison of microbial activity in soils treated with different types of manure, determination of hydrogen ion exchange in different types of soils