**Lecture Learning Outcomes and Objectives**

**Week 5: Evolution and Diversity of Plants – SEEDLESS PLANts**

*Given 2 hours of discussion and assigned reading on the subject, upon an examination and within 70% accuracy, the student should be able to:*

**The Green Algal Ancestor of Plants**

1. Give four features of charophytes consistent with their sharing a common ancestor sometime in the past with plants.
2. Draw an evolutionary tree for plants showing significant innovations during their evolution.
3. Explain the mechanism of “Alternation of Generations” and distinguish between the sporophyte and the gametophyte in the plant life cycle.
4. Associate the increased dominance of the sporophyte with plant adaptations to the land environment.

**Evolution of Bryophytes: Colonization of Land**

1. Name and describe one example of bryophytes.
2. Explain in what ways are bryophytes adapted and not fully adapted to living on land
3. Explain a diagram of the moss life cycle, pointing out significant events.

**Evolution of Seedless Vascular Plants: Growing Tall**

1. Name and describe the vascular tissue of plants
2. Name and describe one example seedless vascular plants
3. Explain the observation that these plants but not bryophytes have roots, stems, and leaves.
4. Explain in what way(s) are seedless vascular plants similar to bryophytes
5. Explain a diagram of the fern life cycle, pointing out significant events.
6. Define the words cuticle, sporophyte, gametophyte, antheridia, archegonia, rhizoid, sporangium, xylem, phloem, heterosporous, homosporous, tracheophyte, bryophytes, pterophytes

***Remarks:***

 ***The main purpose is to have the students getting a sense of where plants come from, what makes them plants, how they are classified and the key features of the four groups of plants. They should also be going slowly and carefully through the alternation of generations and be reminded that all plants have all these stages.***