

Course Code	Course Name	Credits
26BY155	PLANT BIOTECHNOLOGY AND PHYSIOLOGY LAB	02

Objective

This laboratory course is designed to develop foundational and advanced practical competencies in plant tissue culture, plant physiology, and stress-related biochemistry. It includes standard procedures such as preparation of Murashige and Skoog medium, aseptic manipulation of explants, in vitro propagation techniques, and the analysis of physiological and biochemical responses through pigment separation, chlorophyll estimation, osmotic potential measurement, and assays for proline, phenol, and antioxidant enzymes.

1. Preparation of nutrient medium - Murashige and Skoog medium (Demonstration only).
2. Familiarize the instruments included in the syllabus, such as the autoclave and laminar air flow chamber.
3. Sterilization and inoculation of explants.
4. Establishing shoot tip, axillary bud cultures (Demonstration only).
5. Preparation of synthetic seeds.
6. Determination of osmotic potential by the plasmolytic method.
7. Calculation of stomatal index and stomatal frequency.
8. Demonstration of the Hill reaction.
9. Separation of photosynthetic pigments by TLC/paper chromatography and R_f calculation.
10. Estimation of total chlorophyll.
11. Estimation of phenol in plant tissues affected by biotic stress.
12. Estimation of proline in stressed plant tissues.
13. Estimation of catalase or peroxidase activity.

Students are required to perform and record at least eight experiments in the laboratory manual as part of the course requirements.