Academic Council Meeting No. and Date: 11 / June 27, 2025

Agenda Number : 3 **Resolution Number : 52 / 3.6**

Vidya Prasarak Mandal's
B. N. Bandodkar College of
Science (Autonomous), Thane

Certificate Course in Basics on Plant Tissue Culture Technology

With effect from Academic Year 2025-2026

Preamble:

Plant tissue culture is an important technology having an array of applications in transdisciplinary research, plant research, environmental research, pharming, micropropagation etc. This certificate course is a Comprehensive program covering major aspects of plant tissue culture techniques and theory. It introduces participants to the fundamental workflow of plant tissue culture laboratory techniques including preparation of Stock Solutions and Media, Surface Sterilization, raising sterile explants *in vitro* and callus culture. Demonstrations of Somatic Embryogenesis & Synthetic seed preparation and organogenesis would be helpful in recognizing stages of embryo development, and shoot/root induction.

Participants would be provided with protocol handouts along with hands-on experience with close supervision and guidance.

OBJECTIVES OF THE COURSE:

1. Observe and understand core plant tissue culture techniques through live demonstrations.
2. Learn the step-by-step procedures for preparing media and handling plant materials aseptically.
3. Gain exposure to practical methods for callus induction, somatic embryogenesis, and organogenesis.
4. Understand the use of lab equipment and materials commonly used in in vitro plant propagation.
5. Witness the full workflow—from explant sterilization to synthetic seed preparation.

LEARNING OUTCOMES:

After completion of this course, participants will be able to

1. Know the components required to set up a tissue culture laboratory.
2. Learn the basic techniques of plant tissue culture.
3. Recognize the stages of callus formation, embryoid development, and shoot/root induction.
4. Understand contamination issues and how to minimize them in a tissue culture setting.

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Structure of Programme

Course Code	Course Title	No. of lectures	Credits
BCCBP043	**Basics of Plant Tissue Culture Technology**	**45**	**2**

Syllabus

Basics of Plant Tissue Culture Technology (2 credits : 1T + 1P)

Eligibility: Student of biological sciences
Mode: Hybrid

Sr. No.	Topic	Theory+Practical
1	Introduction: concept of totipotency; applications of PTC	2
2	Preparation of Stock Solutions and Media for PTC	9
3	Surface Sterilization and raising sterile explants	9
4	Callus Culture	7
5	Somatic Embryogenesis & Synthetic seed preparation	9
6	Organogenesis: Induction of roots and shoots	9
	Total	45

Evaluation Scheme:

At the end of the course, learners need to pass Final examination worth 50 Marks to earn 2 credits.