

JAMSHEDPUR WOMEN'S UNIVERSITY
CERTIFICATE COURSE ON Plant tissue culture technology
(1 year PROGRAMME)
ADMISSION INFORMATION

INTRODUCTION

This course introduced students to current aspects of plant Tissue culture technology used in Agriculture. Plant Tissue culture is an important tool for both basic and applied aspects of plant biotechnology as well as its commercial applications. As a technique widely known for the production of large numbers of genetically identical plantlets, this technology exhibits several advantages over conventional propagation techniques. It is a valuable tool for research on morphogenesis, cell signaling, physiology, and molecular biology, as well as crop improvement by biotechnology. Plant tissue culture who have a focus on commercial applications such as crop improvement, secondary metabolite production, and various strategies for inducing genetic interference; persons who want to understand basic laboratory setup, handling of explants tissue, nutrient medium and establishing the culture, and incubation of cultures.



Sl.No	Information	Dates
1.	Eligibility for Admission	Bachelor's Degree with any stream, Preference Given to B.Sc. Biotechnology, , B.Sc. Botany and B.Sc. Agriculture with 45% Marks
2.	Fee structure	Rs 15,000 /- Per semester
3.	Course Duration	2 Semesters

1 Year Certificate Course in Plant Tissue culture Technology

Duration – 1 year (2 SEM)

Eligibility – A candidate must have passed 12th from recognized Board

Fees – 2000/-

Syllabus

1st SEM

Marks 100 =50 Theory+50 Practical (20 Assignment +30 Practical)

Unit 1

Introduction - History, Scope and Concepts of basic techniques in plant tissue culture. Laboratory requirements and organization. Sterilization - filter, heat, wet and chemical. Media preparation – inorganic nutrients, organic supplements, carbon source, vitamins, gelling agents, phytohormones and growth regulators; composition of commonly used culture media (MS and Gamborg's)

Unit 2

Types of Culture : Single cell culture, cell suspension culture, Protoplast culture, Artificial seed, Organogenesis, Callus culture

Unit 3

Micropropagation - Factors affecting morphogenesis and proliferation rate; technical problems in micropropagation, Production of virus free plants by meristem and shoot-tip culture

Visit to National and International Plant tissue Culture Laboratories

Practical

Hands on practical: Commercial applications of plant tissue culture and nursery technology

1. Sterilization Techniques – Autoclave and Hot Air Oven,
2. Preparation of nutrient media.
3. Establishment of callus culture.
4. Organogenesis in callus cultures
5. Test tube plants
6. Micro propagation.
7. Isolation of plant secondary metabolites.
8. Importance of macro and micro nutrients, phytohormones, growth factors in Nursery

2nd SEM

Marks 100 =50 Theory+ 50 Job Training Project Practical)

Unit 1

Introduction to hands on techniques in plant tissue culture, preparation, handling, and establishing aseptic Cultures; Explants selection, sterilization and inoculation; Callus and cell suspension cultures; Induction And growth parameters.

Unit 2

Genetic manipulation of plants, genetic transformation by *Agrobacterium tumefaciens*. Transgenic plants for crop improvement

Unit 3

Plant nursery technology, elite plants for propagation, condition for establishments and maintenance of Nursery stock, Nutritional requirements of nursery stock, Macronutrients, micronutrients, Organic Supplements, phytohormones and growth factors, mass production of nursery plants.

One month Job Training Project in National and International Plant tissue Culture Laboratories