

## HANDS-ON TRAINING PROGRAMS

Discover & Apply Practical Education

### H A N D S - O N T R A I N I N G P R O G R A M S

- 01** Plant Tissue Culture & Micropropagation



- 02** Molecular Biology & Genetic Engineering



- 03** Cordyceps Cultivation



- 04** Microbial Biotechnology



- 05** Biochemical Analysis



#### About EduDAP Training Academy

EduDAP (Discover & Apply Practical Education) implements comprehensive practical industrial training and internship programs for students and researchers in Agricultural Sciences, Biotechnology, Biochemistry, Molecular Biology, Microbiology, Botany, Pharmacology, Para-medical Sciences, and Zoology at B.Sc./B.Tech./M.Sc./M.Tech./M.Phil./Ph.D. levels. Our objective is to provide industry-specific, hands-on training for skill development and enhancing job opportunities in applied biological sciences.



EXPERT FACULTY



MODERN LABS



HANDS-ON LEARNING



PROJECT REPORTS

#### Who Should Enroll?

B.Sc./B.Tech. Life Sciences

M.Sc./M.Tech. Students

Ph.D. Scholars

B.Pharma/M.Pharma

Agricultural Sciences

Biotechnology Students

Microbiology Students

Biochemistry Students

**MODULE 01****Plant Tissue Culture & Micropagation**

From Media Preparation to Commercial Tissue Culture Techniques

**15–30**

Days Hands-On Lab

A comprehensive hands-on module covering the complete spectrum of plant tissue culture — from basic media preparation to advanced commercial micropagation. Students gain practical experience in aseptic culture, callus induction, organogenesis, somatic embryogenesis, and hardening of tissue-cultured plantlets.

**Detailed Curriculum**

- 01.** Introduction to commercial plant tissue culture laboratory
- 03.** Preparation of stock solutions of nutrient medium
- 05.** Selection, collection and surface sterilization of explants
- 07.** Micropagation techniques
- 09.** Somatic embryogenesis
- 11.** Protoplast culture
- 13.** Organogenesis
- 15.** In vitro plantlet regeneration
- 17.** Introduction to automated polyhouse / hardening unit
- 19.** Project report preparation
- 02.** Introduction to tools and techniques of plant tissue culture
- 04.** Basic tissue culture media preparation
- 06.** Callus culture and maintenance
- 08.** Meristem culture
- 10.** Organ culture
- 12.** Suspension culture
- 14.** In vitro shoot regeneration and rooting
- 16.** Hardening and acclimatization of tissue cultured plantlets
- 18.** Techniques of commercial plant tissue culture

**MODULE 02****Molecular Biology & Genetic Engineering**

DNA Extraction to Gene Expression Profiling &amp; DNA Fingerprinting

**15–30**

Days Hands-On Lab

Master the fundamental and advanced techniques of molecular biology and genetic engineering. This intensive module covers genomic DNA extraction, purification, quantification, PCR amplification, restriction digestion, gel electrophoresis, DNA fingerprinting, RNA extraction, and transcriptional profiling.

**Detailed Curriculum**

- 01.** Introduction to tools and techniques of plant molecular biology
- 03.** DNA purification techniques
- 05.** DNA quality analysis
- 07.** Restriction mapping
- 09.** PCR amplification using molecular markers
- 11.** DNA fingerprinting by ISSR
- 13.** PCR based advanced techniques
- 15.** Total RNA extraction
- 17.** Transcriptional profiling and expression of genes by RT-PCR
- 19.** Project report preparation
- 02.** Genomic DNA extraction from leaves, bacteria and animal tissue
- 04.** Quantification of DNA using NanoDrop spectrophotometer
- 06.** Restriction digestion of DNA by endonucleases
- 08.** DNA fingerprinting using Agarose Gel Electrophoresis
- 10.** DNA fingerprinting by RAPD
- 12.** AFLP and RFLP based DNA fingerprinting
- 14.** Amplified DNA analysis by Gel-Doc
- 16.** Targeted gene amplification
- 18.** Southern blotting

MODULE 03

## Cordyceps Militaris Cultivation Technique

Learn How to Grow the High-Value Medicinal Mushroom

15–20

Days Hands-On Lab

**Cordyceps militaris** (Keeda-Jadi or Yarshagumba) is a medicinal mushroom with anti-cancer, anti-inflammatory, antimicrobial, and immunomodulatory properties. This module teaches the complete cultivation technique from pure culture to harvesting and metabolite estimation.

### Detailed Curriculum

- |   |  |
|---|--|
| <p>01. Introduction to Cordyceps militaris — biology, medicinal properties &amp; market potential</p> <p>03. Liquid media preparation for spawn culture</p> <p>05. Sterilization, inoculation &amp; incubation processes</p> <p>07. Harvesting techniques &amp; disease control</p> <p>09. Project report preparation</p> | <p>02. Potato Dextrose Agar (PDA) media preparation for pure culture</p> <p>04. Rice substrate media preparation for fruiting body regeneration</p> <p>06. Monitoring of photoperiodic management &amp; laboratory environment control</p> <p>08. Spectrophotometric estimation of secondary metabolites</p> |
|---|--|

### Key Learning Outcomes

- Understand the complete life cycle and commercial value of Cordyceps militaris
- Master aseptic techniques for pure culture and spawn preparation
- Independently set up and manage a Cordyceps cultivation lab
- Perform spectrophotometric analysis of bioactive secondary metabolites

**Career Applications:** Cordyceps militaris is a rapidly growing industry with high commercial value (₹1–5 lakh/kg dried product). Trained professionals can set up their own cultivation units or work in nutraceutical companies.

MODULE 04

## Microbial Biotechnology

Bacterial Genetics, Transformation & Agrobacterium-Mediated Techniques

15–20

Days Hands-On Lab

Explore microbial genetics and biotechnology through hands-on experiments covering bacterial growth dynamics, antibiotic sensitivity, plasmid and genomic DNA isolation, transformation techniques, and Agrobacterium-mediated gene transfer.

### Detailed Curriculum

- |  |  |
|--|--|
| <p>01. Bacterial growth curve analysis</p> <p>03. Bacterial antibiotic sensitivity analysis</p> <p>05. Plasmid DNA isolation and purification</p> <p>07. Agrobacterium culture techniques</p> <p>09. Genetic analysis of microbes by RFLP techniques</p> | <p>02. Phage titration techniques</p> <p>04. Bacterial DNA isolation</p> <p>06. Bacterial transformation techniques</p> <p>08. Agrobacterium-mediated transformation</p> <p>10. Project report preparation</p> |
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### Key Learning Outcomes

- Analyse bacterial growth kinetics and understand microbial physiology
- Perform plasmid and genomic DNA isolation from bacterial cultures
- Master bacterial transformation and Agrobacterium-mediated gene transfer
- Apply microbial techniques in agriculture, industry, and environmental biotechnology

A comprehensive biochemistry module covering quantitative analysis of biomolecules, enzyme kinetics, antioxidant assays, spectrophotometric techniques, and chromatographic separation methods essential for any modern biology and pharmaceutical laboratory.

**Detailed Curriculum**

- |   |  |
|---|--|
| 01. Secondary metabolites analysis<br>03. Spectrophotometric analysis techniques<br>05. Isozyme separation techniques<br>07. Quantitative estimation of proteins, lipids, carbohydrates & amino acids<br>09. Project report preparation | 02. Antioxidant assay by DPPH method<br>04. Enzyme activity assay<br>06. Enzyme kinetics<br>08. Chromatographic techniques |
|---|--|

**Key Learning Outcomes**

- Perform quantitative estimation of proteins, lipids, carbohydrates, and amino acids
- Conduct antioxidant assays (DPPH) and secondary metabolite analysis
- Understand enzyme kinetics, activity assays, and isozyme separation
- Apply chromatographic techniques for compound separation and identification

**Duration & Fee Structure**

Program Type	Duration	Fee Range (INR)
Single Module Training	15 – 30 days	₹ 5,000 – ₹ 10,000
Multi-Module Training	30 – 60 days	Custom (based on modules)
Intensive Advanced Program	45 – 60 days	Custom (all modules)
Research Project / Dissertation	1 – 4 weeks	Based on duration

 **Merit Scholarship:** EduDAP offers free training to first merit holders from any recognized educational institution.

**Research & Additional Services**

<b>Projects, Dissertations &amp; Thesis</b> Supervised research for Ph.D., M.Phil., M.Sc., B.Pharma students.	<b>Contractual R&amp;D</b> Collaborative research services for NGOs and institutions.
<b>Facility Sharing</b> Ph.D./M.Phil. scholars can conduct research using our lab.	<b>Project Assistance</b> Professional help in preparing thesis and research projects.

**Infrastructure & Facilities**

Fully equipped laboratories with high-class instruments	Centrally air-conditioned classrooms and laboratories
Audio-visual teaching aids for enhanced learning	Digital library with high-speed data access
Automated polyhouse and hardening unit	Advanced molecular biology lab with PCR, Gel-Doc, NanoDrop

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