

Report on
SUMMER INTERNSHIP in Biological Sciences for the college students 2025
at
ICFRE-Institute of Forest Genetics and Tree Breeding, Coimbatore

Module 3: Advanced Instrumentation Techniques for Plant and Soil Analysis
16th to 30th May, 2025

The ICFRE-Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore, organized a Summer Internship in Biological Sciences 2025 for undergraduate and postgraduate students. Module 3 of the program, titled “Advanced Instrumentation Techniques for Plant and Soil Analysis,” was conducted from 16th to 30th May, 2025. A total of seven students from Bharathidasan University, Thiruchirapalli, and Presidency College, Chennai, pursuing Biotechnology and Plant Biology & Biotechnology, participated in this module.

The objective of the training was to acquaint the students with advanced biological sciences techniques by providing them with real-time laboratory experiences, expert mentorship from scientists and faculty, and hands-on exposure to contemporary research methodologies. The intensive internship aimed to enhance both theoretical understanding and practical competence in cutting-edge techniques.

Key components of the module included Laboratory safety practices and protocols; Preparation of solutions and buffers; spectrophotometric quantification of sugars, proteins, and nucleic acids; Thin Layer Chromatography (TLC) and Gel Electrophoresis; DNA Extraction and Polymerase Chain Reaction (PCR); Enzyme activity assays; Plant material collection, extraction, and purification; Bioactive compound analysis using HPLC and GC-MS/MS; Molecular Docking studies; Soil sampling methods, Processing and Analysis (including pH, EC, Organic Carbon, and nutrient content); Analysis of macro and micro nutrients of plant samples, Interpretation of Plant and Soil Data and Mini-Project Work, including data presentation and assessment.

The resource persons involved in this internship training include Dr. A.C. Surya Prabha, Scientist-E & Training Co-ordinator, Smt. R. Sumathi, CTO & Training Co-ordinator, Smt. Srijita Ganguly, STA, Shri. S. Pragadeesh, STA, R. Smt. Kalaiselvi, SPF, Smt. K.C. Preethi, JPF, Smt. R.E. Komal, SPF and Smt. Aghila Samji, SRF. The students actively participated in all sessions and presented a summary of the training modules and activities during the concluding session. They expressed a strong interest in exploring further the scientific concepts and laboratory techniques introduced during the training. Participants unanimously felt that the training was highly relevant to both their current academic curriculum and future research pursuits. The hands-on experience and exposure to modern instrumentation techniques enriched their understanding and helped unveil latent skills and research potential. Dr. R. Yasodha, Director, ICFRE-IFGTB distributed participation certificates to the students. The program provided a comprehensive platform for students to explore interdisciplinary techniques in biotechnology and environmental sciences, equipping them with practical skills and insights beneficial for future academic and research endeavours.



R. Sumathi, CTO demonstrating bioprospecting



Dr. N. Senthilkumar, Scientist-F demonstrating HPLC



Dr. A. C. Surya Prabha, Scientist-E interacting with the trainees



S. Pragadeesh, STA demonstrating soil analysis using Atomic Absorption Spectrophotometer



Srijita Ganguly, STA demonstration of plant sample



R.E. Komal, SPF detailing Plant DNA isolation



B. Sunitha,CTO briefing about Gass Forest Museum



A. Fowmitha, JPF detailing Molecular Docking



Kalai Selvi, SPF detailing biochemical analysis



K. C. Preethi , Ph.D. Scholar providing hands on training on TLC



Certificate distribution by Dr. R. Yasodha, Director, ICFRE-IFGTB

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The ICFRE-Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore, organized a Summer Internship in Biological Sciences 2025 for undergraduate and postgraduate students. Module 3 of the program, titled ***“Advanced Instrumentation Techniques for Plant and Soil Analysis,”*** was conducted for the Batch-II student participants from 16th to 30th June, 2025. A total of nine interns from colleges affiliated to Bharathiar University, Coimbatore and Periyar Maniyammai University, Thanjavur, participated in this module.

The objective of the training was to acquaint students with advanced biological sciences techniques by providing real-time laboratory experiences, techno- mentorship from scientists faculty, and hands-on exposure to contemporary research methodologies. The intensive internship aimed to enhance both theoretical understanding and practical competence in cutting-edge techniques.

Key components of the module included Laboratory safety practices and protocols; Preparation of solutions and buffers; spectrophotometric quantification of sugars, proteins, and nucleic acids; Thin Layer Chromatography (TLC) and Gel Electrophoresis; DNA Extraction and Polymerase Chain Reaction (PCR); Enzyme activity assays; Plant material collection, extraction, and purification; Bioactive compound analysis using HPLC and GC-MS/MS; Molecular Docking studies; Soil sampling methods, Processing and Analysis (including pH, EC, Organic Carbon, and nutrient content); Analysis of macro and micro nutrients of plant samples, Interpretation of Plant and Soil Data and Mini-Project Work, including data presentation and assessment.

The resource persons involved in this internship include Dr. A.C. Surya Prabha, Scientist-E, & Training Co-ordinator, Smt. R. Sumathi, CTO & Training Co-ordinator, Smt. Srijita Ganguly, STA, Shri S. Pragadeesh, STA, R. Smt. Kalaiselvi, SPF, Smt. K.C. Preethi, JPF, Smt. R.E. Komal, SPF and Smt. Aghila Samji, SRF. The students actively participated in all the sessions and presented a summary of the training modules and activities in the concluding session. They showed an appreciable enthusiasm to learn more about the laboratory methods and scientific ideas covered in the program. All of the participants agreed that the training was extremely pertinent to their future research endeavors as well as their current academic program. The hands-on experience and exposure to modern instrumentation techniques enriched their understanding and helped unveil latent skills and research potential. Dr. B. Nagarajan, Group Co-Ordinator Research and Director In-charge, ICFRE-IFGTB distributed participation certificates to the students. The program provided a comprehensive platform for students to explore interdisciplinary techniques in biotechnology and environmental sciences, equipping them with practical skills and insights beneficial for future academic and research endeavors.



Dr.A. C. Surya Prabha, Scientist-E interacting with the trainees



S. Pragadeesh, STA demonstrating soil analysis using UV Spectrophotometer



R.E. Komal, SPF detailing Plant DNA isolation



A. Fowmitha, JPF detailing Molecular Docking



Kalai Selvi, SPF detailing biochemical analysis



K. C. Preethi, Ph.D. Scholar providing hands on training on TLC



B. Sunitha, CTO briefing about Gass Forest Museum



Presentation made by student participants



Dr B. Nagarajan, GCR addressing the student participants



Certificate distribution by Dr. B. Nagarajan, GCR