ICFRE-Institute of Forest Genetics and Tree Breeding
Coimbatore

SUMMER INTERNSHIP

in Biological Sciences for the college students 2025

About the internship

Gain insights into the world of cutting-edge biology by delving into core areas of the biological sciences through in-depth modules involving real-world lab experience, mentorship from Scientist and expert faculty, and hands-on. Deepen your understanding and practical expertise in advanced biological techniques with an intensive 15/30 day internship program.

Eligibility Criteria

- **B.Sc.,/M.Sc.,/B.Tech students in Biological Sciences or related fields**
- **Passion for scientific research and innovation**

COURSE FEE

Rs.3000 (15 days program)
Rs.6000 (One month program)

Application Deadline

- **7th May, 2025 for candidates to submit their contact details, course interested by email to balabio@icfre.org or balabio@gmail.com**

For more Details
Contact

Dr. A. Balasubramanian
Scientist B and Student Programme Coordinator
Phone: 0422-2484124 /+ 91-8870624630 | Website: https://ifgtb.icfre.gov.in/

Module 1: Plant identification, Herbarium preparation and Plant diversity Analysis (12-26 May, 2025)

Co-ordinators: Shri. Mohammad Ali Naushad and Dr. S.P. Subramani

Principles of Angiosperm Plant Taxonomy, different system of Classification, Plant Nomenclature, Key features of different flowering plant families, Identification in field and in Herbarium. Collecting, pressing, drying, mounting, and labelling plant specimens for preservation, Using statistical methods to quantify plant diversity, such as Shannon-Wiener and Simpson's indices.

Module 2: Insect identification, pest control measures and developing an inventory (15-29 May, 2025)

Co-ordinators: Dr. K.N. Ashrith and Smt. Srijita Ganguly

Insect morphology, taxonomy, and classification. Pest identification, damage assessment, and IPM concepts. Insect collection methods, preservation techniques for various life stages, specimen mounting, labelling, storage, and the preparation of inventory reports for scientific documentation.

Module 3: Advanced instrumentation techniques for plant and soil analysis (Batch 1:16-30 May, 2025; Batch 2: 16-30 June, 2025)

Co-ordinators: Dr. A.C. Surya Prabha and Smt. R. Sumathi

Lab safety practices and protocols, Preparation of solutions and buffers, Spectrophotometry for quantifying sugars, proteins, and nucleic acids, TLC, gel electrophoresis, DNA extraction, PCR, Enzyme activity assays, Plant material collection, extraction, purification, Bioactive compound analysis using HPLC & GC-MS/MS, Molecular docking studies, Soil sampling methods, processing, and property analysis (pH, EC, OC, nutrients), Interpretation of plant and soil data. Group mini-project with data presentation and assessment.

Module 4: Genetic resource characterisation and Genetic transformation methods (19-30 May, 2025)

Co-ordinators: Dr. D. Thangamani and Dr. A. Balasubramanian

DNA isolation, RAPD and SSR marker systems markers, and data analysis using different software. Handling Nanodrop, Spectrophotometer, Gel Documentation System, Electrophoresis System, Thermal Cycler. Principles of genetic transformation, laboratory demonstrations on plasmid isolation, Electroporation / Calcium chloride transfection, Agrobacterium-mediated transformation (plants), selection and screening of transformants.

Module 5: Plant tissue culture and its applications (26 May - 20 June, 2025)

Co-ordinators: Smt. R. Mahalakshmi and Dr. Rekha Warrier

Laboratory practices, Media preparation, Selection of different explants and culture procedures, Hardening of the tissue culture plantlets, Protocols and procedures for the management of tissue culture laboratory, Quality assurance and Quality Contro, Banking Linkages and Entrepreneurship, Clean Production & Waste Minimization, subsidies for establishment.

Module 6: Seed testing procedures including X-ray analysis and Statistical analysis (26 May - 13 June, 2025)

Co-ordinators: Dr. V. Sivakumar and Dr. R. Ananadalakshmi

Principles of quality seed production, collection, processing and extraction, standard seed testing procedures, image analysis and x-radiography techniques. Introduction to basics of Statistics, Data collection method, Data sheets, Data Visualization using graphs, charts, and other visual representations to understand and present data, Data verification. Phenotyping of leaf and seed samples (Demonstration), Phenotyping of Pest infestation and root samples (Demonstration). Measures of central tendency and dispersion, Normal distribution and tests, Conducting T tests, Correlation and regression.

Module 7: Vegetative Propagation, Hybridisation, control pollination and grafting (2-13 June, 2025)

Co-ordinators: Shri. A. Mayavel and Smt. K. Shanthi

Cutting collection, rooting media and hormone preparation, mistless chamber setup, Coir composting, plant hardening, fertigation, pest management. Advanced topics include hybridization, pollen handling, grafting, and layering.

Module 8: Biofertiliser production (16-30 June, 2025)

Co-ordinators: Dr. A. Karthikeyan and Smt. K. Sushamani

Application of biofertilizers and biocontrol agents in forestry, focusing on their types, uses, and benefits. Mass production and application of bio-fertilizers - Arbuscular mycorrhizal fungi, Rhizobium, Azospirillum, Azotobacter, Phosphobacterium, and Potassium-solubilizing bacteria. Production of Trichoderma viride from organic waste, isolation and culturing microbes, develop carrier-based products.

Note: Selected candidates will be provided with ICFRE-IFGTB bank details for transfer of course fee and payment may be made after the selection process. The organizers will not provide food or accommodation; interns are advised to make their own arrangements.