

**The Laboratory Course in
Bio-Techniques**
(LCBT, a post graduate diploma
program) **Now DISCONTINUED!**



Many of the post graduate courses cannot focus on hands-on training of students in laboratory bio-techniques to the required extent. Nevertheless, there seemed to be an increasing demand for reliable technical expertise in the area of molecular biology/biotechnology. The LCBT aimed to fill this gap. The course was initiated in Dec 2003.

The course was more than just a series of experimental demonstrations and hands-on sessions! Following are its salient features:

- Designed to make the students highly independent and complete laboratory professionals.
- Eight months of intense laboratory training with a further option to perform 4 to 6 months of project work.
- Candidates completing the 8-month course were awarded a 'Certificate' and candidates selected to complete the project (additional 6 months) will be awarded a 'Diploma'.
- Awareness of industrial requirements, work culture and statutory regulations.
- General professional skills as well as basic laboratory training stressed.

Placements: about 95% students were placed.

[Batch-wise details can be found here!](#)

Examples of organizations that hired our students:

- *Industry:* Molecular Connections, Novozyme, Abexome, Biobase, Avesthagen, Biocon.
- *Academia:* Indian Institute of Science, National Centre for Biological Sciences, Centre for Human Genetics, IBAB, University of Georgia (USA).



Eligibility: Bachelor's or degree in any life sciences
Exceptionally good graduates in life science were also be considered.

Selection:

- Was based on a written test and/or interviews.

This program does not exist now; please **DO NOT SEND QUERIES** about this course

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The Syllabus

A. Basic theoretical aspects:

1. Research in life sciences: An overview and a few specific examples.
2. Safety, common equipment and reagents used; basics of computer and statistics.
3. Introduction to bioethics, IPR issues, some of industrial activities and practices and related statutory regulations.

B. Practical sessions: Regular assignments

1. Record keeping (patent-oriented) and other relevant professional skills (e.g., presentation skills, literature search, experimental designs, interpretation of results, and team work).
2. Understanding accuracy, precision and variations in results.
3. Basic bioinformatics: Sequence analysis, primer designing and related databases and tools.

C. Practical sessions with repeated performance by the students

1. Basic bacterial culture methods.
2. DNA and RNA handling:
 - Genomic DNA (plant, microbial and animal) isolation and quantification
 - Analysis of DNA samples by gel electrophoresis
 - RNA isolation
 - Quantification and gel electrophoresis of RNA
3. Recombinant DNA technology
 - Primer designing and PCR
 - Restriction digestion and ligation
 - Preparing competent cells and transformation
 - Cloning and plasmid isolation
4. Protein handling
 - Extraction and quantification
 - Native and SDS-PAGE; staining procedures for the same.



D. Practical sessions with limited performance by students

- Purification of DNA after enzymatic reactions
- mRNA isolation
- Reverse transcription-PCR
- Blotting DNA and RNA for Southern and Northern
- Two-dimensional electrophoresis
- Expression of cloned sequences
- Western and ELISA
- Purification: Chromatography
- Mammalian cell culture and transfection



E. Demonstrations/theory only

- Complete Southern and Northern procedures
- DNA sequencing and Microarrays
- Protein activity assays

F. Networking and exposure: Visits to industrial/academic organizations and interactions with eminent persons in the related area.

G. Project work in a specialized area.

This was usually a specific research work or industrial project, in any organization, that involved one or more of the above mentioned techniques.