4 Weeks Hands-On
Skill Development
Internship

1 month
Summer
INTERNSHIP

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DISCOUNT
OPEN TILL
6TH JUNE

Decode the Genome: Comprehensive Bioinformatics Bootcamp

Explore the Language of Life Through Data This Summer

1 Month | 13 June to 11 July 2025
Registration Closes: 12 June 2025
3:30 - 4:30 PM (IST) | Monday to Friday

Learning Modules

1. Introduction to Bioinformatics & Biological Databases
2. Sequence Alignment
3. Genomics & NGS
4. RNA-Seq Data Analysis
5. Bioinformatics with R
6. Genome Assembly & Annotation
7. Population Genomics & GWAS

MORE DETAILS

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COURSE INSTRUCTORS

Dr. Shikha Mittal, Bioinformatics Trainer, CBIRT
Dr. Tamanna Anwar, Training Organizer & CoFounder, CBIRT

CENTRE OF BIOINFORMATICS RESEARCH & TECHNOLOGY

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MODULE I

June 13-16, 2025	**Introduction to Bioinformatics & Biological Databases**
	• Basics of Bioinformatics: Scope, Applications, Tools
	• DNA, RNA, and Protein Structure Refresher
	• NCBI, UniProt, Ensembl, KEGG, PDB, Pfam
	• Data retrieval using Entrez, BioMart
	Hands-on:
	• BLAST and sequence similarity search
	• Using NCBI/UniProt for gene/protein data

MODULE 2

June 17-18, 2025	**Sequence Alignment**
	• Pairwise & Multiple Sequence Alignment
	• Global vs Local Alignments (Needleman-Wunsch, Smith-Waterman)
	• MSA Tools: Clustal Omega, MUSCLE, MAFFT
	Hands-on:
	DNA/Protein sequence alignment
	Alignment visualization with Jalview

MODULE 3

June 19-24, 2025	**Genomics & NGS**
	• Overview of NGS platforms
	• Quality Control: FastQC, Trimming: Trimmomatic
	• Mapping reads: BWA, Bowtie2
	• Variant calling: Samtools, Freebayes
	Hands-on:
	• NGS analysis pipeline using a small public dataset (DNA-Seq)

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MODULE 4

June 25-30, 2025	**RNA-Seq Analysis** • RNA-Seq Workflow & Differential Expression Analysis Tools: HISAT2, STAR, StringTie, DESeq2, edgeR Functional Annotation: DAVID, g:Profiler **Hands-on:** • RNA-Seq pipeline on a sample dataset

MODULE 5

July 1-3, 2025	**Bioinformatics with R** • Introduction to scripting (Bioconductor) • Data manipulation, plotting, and workflow creation **Hands-on:** • Basic scripts for sequence handling and data analysis • Exploratory plots and automation

MODULE 6

July 04-07, 2025	**Genome Assembly & Annotation** • De novo vs Reference-based Assembly • Assemblers: SPAdes, Velvet **Hands-on:** Bacterial genome assembly and annotation

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MODULE 7

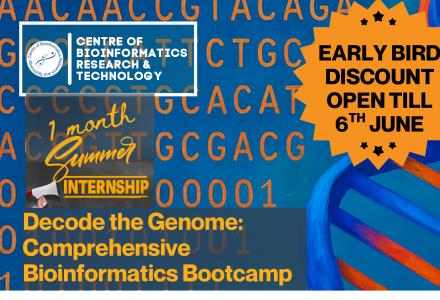| July 08-11, 2025	**Population Genomics & GWAS** • SNP Calling, Genotype Imputation • GWAS: TASSEL, RGAPIT, Manhattan plots • Population structure: PCA, STRUCTURE **Hands-on:** • Population genomics pipeline on sample data • GWAS and structure analysis

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REGISTRATION PROCESS

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or Scan the QR Code

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INR-5499

STAFF/FACULTY
INR-5999

INDUSTRY PROFESSIONALS
INR-6499

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STUDENTS (UPTO PHD LEVEL)	POSTDOC/ RESEARCH SCHOLARS	STAFF/FACULTY	INDUSTRY PROFESSIONALS
USD 65	USD 70	USD 80	USD 90

Early Bird Registration (Closes 6th June, 2025)	Students (Upto PhD Level)	Postdoc/Research Scholars	STAFF/Faculty	Industry Professionals
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