

Metagenomics & Microbiome Informatics — Hands-on

Gain expertise in 16S and shotgun metagenomics—QC, host decontamination, taxonomic and functional profiling, diversity statistics, assembly, binning, and reproducible reporting.

Metagenomics & Microbiome Informatics

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Session 1

Fee: Rs 6300 [Apply Now](#)

Design, QC & Decontamination

Study design for 16S vs shotgun; controls and metadata schemas

Theory

Read QC, trimming and adapter removal; human host depletion

[FastQC](#) [MultiQC](#) [fastp](#) [Trimmomatic](#) [KneadData](#)
[Bowtie2](#)

rRNA amplicon denoising vs shotgun mapping concepts

[QIIME 2](#) [DADA2](#) [Deblur](#)

Session 2

Fee: Rs 8400 Apply Now

Taxonomy & Diversity Analytics

Taxonomic profiling and reference databases

Kraken2/Bracken **MetaPhlAn** **SILVA/Greengenes**

Alpha/beta diversity, ordination and hypothesis testing

Shannon/Simpson **Bray-Curtis/UniFrac** **PCoA/NMDS**
PERMANOVA

Visualization and reporting layers

phyloseq **ggplot2** **plotly**

Session 3

Fee: Rs 11200 Apply Now

Functional Profiling, Assembly & Binning

Pathways and gene families from shotgun data

HUMANN **UniRef** **KEGG/eggNOG**

De novo assembly, binning and MAG quality checks

MEGAHIT/metaSPAdes **MetaBAT2/MaxBin2/CONCOCT**
CheckM/GTDB-Tk

Resistance and virulence screens (optional)

CARD **ResFinder** **VFDB**

Session 4

Fee: Rs 14000 Apply Now

Mini Capstone: Microbiome Pipeline

Design an end to end 16S or shotgun pipeline with provenance

Theory

Automate ingest→QC→taxa→function→report with dashboards

Snakemake **Conda/Mamba** **Quarto/JupyterLab**

Export figures, biom/tables and submission-ready metadata

QIIME 2 **BIOM** **ENA/GEO/SRA**