

Geospatial Bioinformatics & Ecological Genomics — Hands-on

Connect microbiome and eDNA outputs with place. This module teaches you to plan georeferenced sampling, build covariate stacks from remote sensing and in-situ data, run spatial statistics and species distribution models (SDMs), and generate interpretable maps for ecology, conservation, agriculture and water quality. Deliver reproducible, MIxS-compliant geo-products: diversity heatmaps, hotspot/risk layers, and stakeholder dashboards.

Geospatial Bioinformatics & Ecological Genomics

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Session 1

[Fee: Rs 8800](#) [Apply Now](#)

Georeferenced Sampling & Covariate Stacks

Site planning & GPS QA/QC

[stratified/random/grid designs](#) [accuracy, datum & CRS basics](#) [waypoints & field apps](#)

Environmental covariates (rasters/vectors)

[WorldClim/ERA5/DEM/land-use](#) [Landsat/Sentinel](#)

indices (NDVI/NDWI) soil/chemistry & hydrology layers

Toolchain & data models

QGIS/PostGIS R: sf/terra/gstat/spdep Python: geopandas/rasterio/xarray

Session 2

Fee: Rs 11800 Apply Now

Spatial Statistics & Interpolation

Autocorrelation & clustering

Moran's I/Geary's C Getis-Ord hotspots spatial weights & scales

Variograms & kriging/IDW

empirical & fitted variograms ordinary/universal kriging cross-validation & error maps

Compositional outputs on maps

CLR/balances for diversity beta-dispersion surfaces uncertainty visualization

Session 3

Fee: Rs 14800 Apply Now

SDMs, Diversity Surfaces & Environmental Drivers

Species/feature distribution models

MaxEnt/RF/GBM/glmnet presence-only & pseudo-absences AUC/PR & calibration

Diversity & function mapping

alpha/beta diversity rasters functional guild/ARG layers partial dependence/SHAP

Scenario & change analysis

land-use & climate deltas **thresholding & corridors**
marine/terrestrial variants

Session 4

Fee: Rs 18800 Apply Now

Geo Dashboards, Publishing & Reproducible Reporting

Dashboards & decision layers

QGIS/leaflet & tiles **hotspots/alerts & risk bands**
time-series & animations

Data standards & publishing

MixS/ENVO & metadata **projections & symbology**
reproducible map bundles

Reporting & deliverables

Quarto notebooks/SOPs **tables/figures + env files**
stakeholder briefs