Visualization, Dashboards & Reporting for Systems Biology — Hands-on

Learn how to translate complex systems biology models and simulations into **clear visual stories and decision-ready reports**. This module covers principles of scientific visualization, plotting time courses and phase planes, summarizing parameter scans and sensitivity outputs, and building interactive dashboards so collaborators and stakeholders can explore model behavior. You will create publication-quality figures and simple dashboards using R, Python and web-based tools.

Visualization, Dashboards & Reporting for Systems Biology

Help Desk · WhatsApp

Session Index

Session 1

Fee: Rs 8800 Apply Now

Visualization Principles & Storyboarding for Models

Foundations of scientific visualization for systems models

choosing plots for questions | **avoiding clutter & misrepresentation** | **color, scales and readability (concepts)**

Storyboarding model insight

from model question to figure sequence | overview vs deep dive plots | tailoring visuals for biologists vs engineers

Toolchain overview for plotting

R (ggplot2 basics) / Python (matplotlib/plotly concepts) | exporting figures for papers & slides | reproducible figure scripts & notebooks

Session 2

Fee: Rs 11800 Apply Now

Plots for Dynamics, Phase Space & Parameter Scans

Visualizing time courses and trajectories

single and multi-panel time series | overlaying data and model output | uncertainty bands & ensembles (concepts)

Phase planes, nullclines & attractor views (concept level)

2D phase portraits & trajectories | bifurcation style summary plots (high level) | visual hints of multistability & oscillations

Parameter scans, sensitivity & heatmaps

1D & 2D parameter scans plots | global/local sensitivity visual summaries | heatmaps, tile plots & ranking visuals

Session 3

Fee: Rs 14800 Apply Now

Dashboards & Interactive Exploration

When to move from static plots to dashboards

use cases: parameter sliders & toggles | stakeholder exploration of model behavior | lightweight vs heavy

dashboards

Dashboard toolchain overview

R Shiny (concepts) / Python Dash or Panel (concepts) Plotly-style interactive charts (high level) linking controls to simulation calls (overview)

Designing dashboards for systems models

layout and navigation patterns choosing key KPIs and plots basic performance and deployment considerations

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Model Insight Report & Dashboard

Concept to storyboard for one model or case study

Theory + Practical

Figures, summaries & simple interactive view

time-course, phase and parameter scan plots sensitivity or uncertainty summary visuals minimal dashboard or interactive notebook

Deliverables

PDF/HTML model insight report R/Python scripts or dashboard app skeleton environment.yml / requirements.txt