Capstone — Integrated Systems Biology Project — Hands-on

Apply everything you have learned across systems biology, network modeling and pathway informatics in a guided capstone project. You will scope a problem, assemble data, construct and analyse networks and models, run targeted simulations and produce a coherent report and presentation that connects methods to biological insight and decision support.

Capstone — Integrated Systems Biology Project

Help Desk · WhatsApp

Session Index

Session 1

Fee: Rs 8800 Apply Now

Project Scoping & Data Assembly

Define the capstone question and systems level goals

disease, pathway or network focus **mechanistic or predictive objectives** **scope, assumptions and success criteria**

Select and assemble relevant datasets and resources

omics matrices and annotations (concept) **networks, pathways and knowledge bases** **metadata and phenotype information**

Project plan and reproducible workspace setup

R or Python notebook project skeleton **data folders and configuration files** **timeline and milestone checklist**

Session 2
Fee: Rs 11800 Apply Now

Network, Pathway & Model Build Sprint

Construct core networks and pathway views for the project

PPI and regulatory networks around key entities **pathway diagrams with highlighted modules** **enrichment or topology style scores**

Develop a simple quantitative or constraint based model (concept level)

choice of ODE, FBA or hybrid style outline **state variables, reactions and constraints** **baseline parameter or flux assumptions**

Implementation toolkit integration in notebooks and files

R or Python for networks and basic models **Cytoscape or similar for layout exports** **SBML or structured formats where applicable**

Session 3
Fee: Rs 14800 Apply Now

Analysis, Validation & Storyline

Analyse network and model behaviour under key scenarios

baseline and perturbed simulations **simple scans for sensitivity and robustness** **summary figures and tables for main findings**

Cross check against data, literature or qualitative expectations

alignment with known pathways and phenotypes **gaps, limitations and uncertainty notes** **hypothesis and mechanism statements**

Build a coherent biological and systems level storyline

from question to methods to insight **link figures to narrative paragraphs** **outline for report and slide deck**

Session 4

Fee: Rs 18800 Apply Now

Final Capstone Packaging & Presentation

Prepare a publication style report and slide deck

Theory + Practical

Organise code, data and models for reproducibility and review

final R or Python notebook bundle **network and model exports in standard formats** **readme and environment description files**

Deliverables: capstone notebook, figures, report & presentation

integrated analysis notebook and scripts **PDF/HTML report and slide deck file** **archive ready project folder for future use**