

Systems Pharmacology & PK/PD Integration — Hands-on

Connect pharmacokinetics (PK), pharmacodynamics (PD) and systems biology. This module introduces systems pharmacology concepts, PK/PD modeling workflows and how to link drug exposure to pathway and phenotype level responses for preclinical and translational research questions.

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Session Index

Session 1 — PK/PD Foundations & Systems Pharmacology | Session 2 — PK Models, Compartments & Dose Regimens | Session 3 — PD Models, Exposure–Response & Pathways | Session 4 — Mini Capstone: PK/PD & Systems Pharmacology Case

Session 1

Fee: Rs 8800 Apply Now

PK/PD Foundations & Systems Pharmacology

What PK, PD and systems pharmacology cover

ADME and exposure concepts | **effect and response ideas** | **pathway and network context**

Use cases in preclinical and translational research

dose and schedule exploration | **combination strategy ideas** | **linking biomarkers to models**

Modeling ingredients and data types

concentration time profiles | effect and biomarker time series | covariates and variability view

Session 2

Fee: Rs 11800 | Apply Now

PK Models, Compartments & Dose Regimens

Compartment models and ADME intuition

one and two compartment ideas | clearance and volume concepts | distribution and elimination views

Dosing routes and regimens (conceptual)

bolus vs infusion sketches | oral dosing and absorption idea | multiple dose accumulation view

PK parameters and summary metrics

Cmax, AUC and half life intuition | exposure windows and thresholds | steady state concepts

Session 3

Fee: Rs 14800 | Apply Now

PD Models, Exposure–Response & Pathways

Direct and indirect response model ideas

Emax and sigmoid Emax intuition | delayed effects and turnover view | link models between PK and PD

Exposure–response and variability awareness

concentration effect plots | inter individual variability concept | safety and efficacy windows view

Systems pharmacology and pathways

placing PK/PD into networks | multi target and pathway effects | combination and sequence concepts

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: PK/PD & Systems Pharmacology Case

Pick a small PK/PD and systems pharmacology scenario

theory plus guided practical

Sketch PK and PD models and explore dose scenarios

simple compartment PK sketch **E_{max} or indirect response PD** **compare a few regimens conceptually**

Deliverables: notebook, diagrams and short summary

Python or R notebook **PK/PD block diagrams** **PDF or HTML case summary**