S.A.S. Nagar

On-line certificate course on
Computational Pharmaceutics

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Starts

June

2025

Introduction

Prof. Dulal Panda (Director NIPER S.A.S. Nagar)

NIPER S.A.S. Nagar, India's premier pharmaceutical institute, welcomes you to the first on-line course on Computational Pharmaceutics. For the first time, you can get educated in industry focused course from NIPER regardless of your age or location, and with a wide range of academic backgrounds. NIPER S.A.S. Nagar is taking a first step in on-line course to pharma/science graduates who will be employable and upgrade to those already employed in a sector that presently has high demand. The course Computational Pharmaceutics is of 2 credits spanned over 18 weeks similar to a regular course at NIPER. This course is flexible and affordable. I believe this course will be a first on line course in Computational Pharmaceutics in India and a game changer in the field of education in India.

Why Computational Pharmaceutics?

Pharmaceutical drug development and drug delivery have become increasingly challenging in the pharmaceutical industry due to longer time and higher cost. The current formulation development still relies on traditional trial and error experiments, which are time consuming, costly and unpredictable. A new discipline of Computational Pharmaceutics integrates with big data, artificial intelligence and modelling techniques into pharmaceutics. Computational pharmaceutics provide multi scale lenses to pharmaceutical scientists revealing physical, chemical, mathematical and data driven details ranging across preformulation studies, formulation screening, in vivo prediction in the human body, and precision medicine in the clinic.

ABOUT NIPER S.A.S. NAGAR

NIPER SAS Nagar was established as an institution of higher learning in pharmaceutical sciences to act as a nucleus of industry-academia interaction. NIPER SAS Nagar has successfully completed a quarter of a century and can build upon its strength and expand its horizon beyond the national boundary. As reflected in several national and international ranking parameters, the institute has been largely successful in these efforts. This is primary due to the strong emphasis on providing hands-on training to the students, making them industry-ready when they graduate. In consultation with leaders in academia and industry, we consistently revise our curriculum and strengthen our infrastructure so that students'
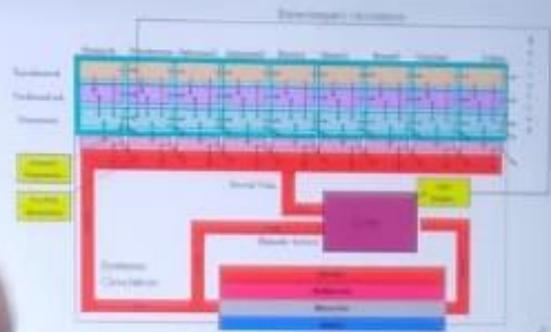
Prof. Abhay T. Sangamwar

Prof. Abhay make use of knowledge of gastrointestinal physiology to improve delivery of oral drug products. He has a strong background in pharmaceutics, material sciences, physical chemistry and physiology. He focuses on gastrointestinal barriers and drug behaviour due to its own physicochemical properties at the physiology for efficient absorption. He makes use of advanced computational modelling to understand the behaviour of drugs at the physiology.

Course Content

Sr. No.	Content	Duration
1	Brief reminders on pharmacokinetics	6 hr.
2	Notions on linearity/non linearity in pharmacokinetics	2 hr.
3	Compartmental analysis of pharmacokinetic data: main models and mathematical aspects	2 hr.
4	Non compartmental analysis	2 hr.
5	PBPK modelling	
	a. Classical Vs PBPK models	2 hr.
	b. PBPK model structure and assumption	2 hr.
	c. Drug specific input parameters Vs system related input parameters	2 hr.
6	PBPK modelling strategy in drug discovery and development	
	a. Discovery and early development stage	2 hr.
	b. Clinical development stage	2hr.
	c. Drug delivery stage	4 hr.
7	Population pharmacokinetic	
	a. Concepts and met - methodologies in PoP-Pk	2 hr.
	b. Applications to generic product development	3 hr.
8	PK-PD models	
	a. Modelling a pathophysiological state in the absent of drug	2 hr.
	b. Modelling the effect of drug on the pathophysiological state	1 hr.
	Quiz at the mid of the course	1 hr.
	Final on line examination	1 hr.