

# INDIAN INSTITUTE OF TECHNOLOGY INDORE

## Discipline of Biosciences and Biomedical Engineering

### Organizes

6-Days Active Learning Course on

## Modern Tools and Techniques in Drug Design, Discovery and Delivery

March 4-9, 2019

Sponsored by Technical Education Quality Improvement Programme (TEQIP)-3, MHRD



TEQIP-3  
Technical Education Quality Improvement Programme

### ABOUT IIT INDORE

Indian Institute of Technology Indore, located in Madhya Pradesh, known as IIT Indore, is an institute of national importance established by the Government of India in 2009. The discipline of Biosciences and Biomedical Engineering (BSBE) at IIT Indore was initiated in 2012 with a vision of establishing a centre of excellence that will focus on research in multidisciplinary areas of Biosciences and Biomedical Engineering. The discipline offers the MSc (Biotechnology) and PhD degrees and runs a minor in BSBE. Recently, IIT Indore debuted with a rank of 351-400 in the Times Higher Education World University Rankings, 2019, 2<sup>nd</sup> among Indian institutes.

### COURSE OBJECTIVES

This short-term course will introduce participants to the concepts, methods and tools for drug designing, discovery and delivery. On an average, a successful transformation of a drug from bench side to bedside takes somewhere around 12-15 years of vigorous research and development and costs more than \$500-1000 million. Therefore, efficient tools and techniques are needed to predict the lead compound before committing that huge amount of investments. Similarly, pre-clinical studies play an instrumental role before taking the drugs into clinical trials. This TEQIP course will cover the full spectrum of the development of a drug starting from the synthesis/discovery of lead compound to computational studies for the optimization of the structure of the lead, and finally talking about the delivery of the drug into the target site to minimize adverse effects. We will also discuss how one can explore 'Omics Technology' to understand the mechanism of action for a given drug. The key concepts that we would like address through this interactive session are factors to consider before designing a drug, optimization of lead via Quantitative Structure-Activity Relationship (QSAR), computational modelling as an important tool for drug discovery, drug delivery systems, and mechanism of action. Advancement of the biomedical field through nanotechnology in diagnosis and therapy of diseases will also be discussed.

### REGISTRATION FEE

- There is **no fee for participants (students/faculty) from TEQIP sponsored colleges**. The nominations along with the registration forms must be sent through their coordinator to the address below. Email confirmation in advance is suggested.
- Non-TEQIP Colleges: The fee is ₹ 4000 for students/research scholars and ₹ 6000 for faculty.
- For industry personnel, the fee is ₹ 8000.

Registration fee includes course material, refreshment and working lunches.

**Early registration is recommended due to a limit on the number of seats.**

**Participants are required to bring their own laptops.**

### COURSE FACULTY

- Dr. Parimal Kar (Assistant Professor, IITI)
- Dr. Sushabhan Sadhukhan (Assistant Professor, IITI)
- Dr. Hem Chandra Jha (Assistant Professor, IITI)
- Dr. Abhijeet Joshi (Assistant Professor, IITI)

### COURSE MODULE

This is an **active learning** based course and comprised of lectures, tutorials, and hand-on training/demonstrations.

#### Module I: Drug Design

- Introduction to Computer Aided Drug Design: Structure Based Drug Design (SBDD) and Ligand Based Drug Design (LBDD)
- Designing Libraries and Small Molecules
- Molecular Modelling: Docking, Virtual Screening, Homology Modelling, Molecular Dynamics, ADMET

#### Module II: Drug Discovery

- Lead Compounds: Natural Product and Endogenous Metabolite
- Lead Optimization: Structure Activity Relation (SAR)
- Validation: Activity-Based Profiling (ABP)
- Cytotoxicity: Determination of IC<sub>50</sub>

#### Module III: OMICS Technology in Drug Discovery

- Genomics, Proteomics, Transcriptomics, Metabolomics and Nutrigenomics

#### Module IV: Drug Delivery

- Nano/Micro-Carriers and Biomaterials
- Drug Delivery: Targeted and Stimuli Responsive
- Theranostics
- Commercialization of Drugs

### CERTIFICATE

Participants who successfully complete the course will be awarded with a certificate.

### TARGET PARTICIPANTS

This course is tailor made for the students, researchers, and faculty members from the disciplines of Pharmaceutical Engineering, Biomedical Engineering, Biotechnology, Chemical Engineering, Computer Science, Biological Sciences, Chemical Sciences and Physical Sciences.

### ACCOMMODATION

Accommodation may be available at hostels/guest house of IIT Indore on chargeable basis: For hostel accommodation, kindly write to [hostel@iiti.ac.in](mailto:hostel@iiti.ac.in) and for guest house accommodation, kindly write to [guesthouse@iiti.ac.in](mailto:guesthouse@iiti.ac.in)

### MODE OF PAYMENT

#### Via NEFT:

The payment can be made By Demand Draft: Demand Draft should be drawn in favour of "Registrar, IIT Indore", payable at Indore **OR** by NEFT Transfer: Registration fee can be paid through NEFT. Transfer of the amount can be done to the A/c number given below:

**Name of the Beneficiary:** Registrar, IIT Indore

**Name of Bank:** Canara Bank

**Branch:** IIT Indore, Simrol Campus Branch

**Beneficiary Account No.:** 1476101027440

**Bank IFS Code:** CNRB0006223

The signed registration form must be sent through their coordinator to the address below. Email confirmation in advance is suggested.

**Evidence of payment should be emailed in advance to confirm the participation (Participant from TEQIP sponsored colleges are exempted)**

#### Via Paytm:

Link for the payment through Paytm portal is available on IIT Indore website: <http://www.iiti.ac.in/>

- ❖ IIT Indore website → Paytm Portal
- ❖ Click on URL for new students registration [LINK](#)
- ❖ Select → Registration for events → Workshops/Conference → Other Details → Proceed

**Registration deadline: 25<sup>th</sup> February 2019**

### COURSE COORDINATOR:

**Dr. Parimal Kar**

Discipline of Biosciences and Biomedical Engineering  
Khandwa Road Simrol, Indore-453552, M.P.

Email: [parimal@iiti.ac.in](mailto:parimal@iiti.ac.in)

Phone: +91 9893721207

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1.	Name of the Person:	
2.	Designation:	
3.	Academic Qualification:	
4.	Name of the Institution/Organization:	
5.	Address for Communication:	
6.	Phone:	
7.	Email:	
8.	Payment Details:	
	Amount:	
	Payment Ref. No:	
	Transaction Data:	
	Bank etc. Details:	
Place:		Date:
Signature of Participant:		
<b>Approval /Permission from the Institution/Organization:</b> We approve the above application as participant for the above short course, which is being organized by IIT Indore on 4 <sup>th</sup> to 9 <sup>th</sup> March 2019.		
Authorized Signature		Institute/Organization seal

Note: To confirm the participation in advance, scan copy of the filled form can be emailed to [parimal@iiti.ac.in](mailto:parimal@iiti.ac.in)

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