



INDIAN INSTITUTE OF TECHNOLOGY (IIT) INDORE

Department of Biosciences and Biomedical Engineering (BSBE)

organizes

KARYASHALA

7 Days active learning and hands-on training on

"Genomics and Proteomics analysis of DNA and RNA virus induced disease progression"

Dates : 19th June – 25th June 2023

Sponsored by Science and Engineering Research Board

KARYASHALA : ACCELERATE VIGYAN SCHEME



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.

Department of Biosciences and Biomedical Engineering was established in the year 2012 with an aim to apply the principles of science and engineering to further fundamental knowledge and applications in biology and biomedical engineering.

COURSE DETAILS

Date	10 am – 1 pm	2 pm - 6 pm
19/6/2023	The inauguration followed by an overview of all day's hands-on training events information in detail. Pre-requisites helpful information for all hands-on training experiments.	RNA isolation from DNA/RNA virus-infected cells (Trizol method). Visualization, quantitation, and analysis of RNA from virus-infected host cells (RNA gel electrophoresis, nanodrop, spectroscopy)
20/6/2023	RNA to cDNA conversion and preparation of real-time PCR plate (PCR, RT-PCR)	Real-time PCR experiments with various primers and analysis the results (qRT-PCR)
21/6/2023	Virus-infected cells biomolecular spectrum study compared to controls (Raman microspectroscopy)	Analysis of biomolecular signature obtained from Raman spectroscopy (Analysis and result interpretation, Principal component analysis)
22/6/2023	Protein biomarkers study through Immunofluorescence study (Immuno-flourescence methods)	Protein biomarkers observation through a Fluorescence microscope along with nuclear staining (Fluorescence microscope)
23/6/2023	Preparation of virus-infected cells for cell sorting and Immunophenotyping (Flow cytometer protocol)	Using cell sorting & Immunophenotyping of Virus infected cells (BD FACSAria III & (BD FACSAria III)
24/6/2023	Large scale Machine learning algorithm & applications to Biomedical Data	Deep Learning approaches for Biomedical data
25/6/2023	Overall assessment, test, and feedback session	Valedictory function and certificate distribution to participants, volunteers, and faculties.

COURSE FACULTY

- **Dr. Hem Chandra Jha**, Associate Professor, Department of BSBE, IIT Indore, Indore
- **Prof. Avinash Sonawane**, Professor, Department of BSBE, IIT Indore
- **Prof. Rajesh Kumar**, Professor, Department of Physics, IIT Indore, Indore
- **Dr. M. Tanveer**, Associate Professor, Department of Mathematics, IIT Indore
- **Dr. Hamendra Singh Parmar**, Assistant Professor, Devi Ahilya Vishwavidyalay, Indore

COURSE MODULE

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

CERTIFICATE

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

TARGET PARTICIPANTS

This course is tailor made for students and researchers from any academic background.

REGISTRATION PROCESS

Interested participants need to submit an online form

Number of participants are limited to 13 M.Sc. students and 12 PhD scholars only, based on screening.

ONLINE REGISTRATION LINK : [click here](#)

COURSE FEES : ₹ 2000/-

REGISTRATION DEADLINE: **30th May 2023**

Selected candidates will be informed by 5th June 2023

COURSE COORDINATOR AND ORGANIZER: **DR. HEM CHANDRA JHA**

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