

## REGISTRATION FORM

(UPLOAD LINK, [CLICK HERE](#))

1. Name: .....

2. Designation: .....Department.....

3. Organisation: .....

4. E-mail: .....

Mobile No.: .....

WhatsApp No: .....

Postal Address: .....

5. Specialisation: .....

6.  CFTI  Sate Govt  Other

Date: ..... Signature of Applicant

Place: .....

### Certificate

This is to certify that \_\_\_\_\_  
is a student of our Institute/Organisation and is  
permitted to attend five days short-term course on  
“**Emerging Trends of Multidisciplinary Research  
in Fluid Mechanics**” to be held at NIT Rourkela,  
during 25<sup>th</sup> - 29<sup>th</sup> Sept., 2023.

Signature with official seal  
(HoD/Supervisor)

### ABOUT NIT ROURKELA

National Institute of Technology Rourkela is an Institute of national importance created under the act of parliament. NIT Rourkela has been ranked as 225 and 31th position in QS Asia University and QS Indian University Ranking 2021, respectively. It has also been ranked in 15st position in NIRF engineering category, 2023. Times Higher Education has figured NIT Rourkela in the group of 1000-1200 in World University Ranking 2023. The institute provides quality education in a diverse and multicultural environment. The mission of the institute is to become an internationally acclaimed institution of higher learning that will serve as a source of knowledge and expertise for the society and be a preferred destination for undergraduate and post graduate studies. The institute is offering undergraduate, post graduate and PhD programme in 21 branches of Engineering. The institute research centres are engaged in consultancy and research activities of several government bodies such as DST, DAE, CSIR, DRDO, BARC, ISRO and private industries.

### DEPARTMENT OF MECHANICAL ENGINEERING

The Mechanical Engineering of NIT Rourkela comprises three divisions namely design, manufacturing and thermal engineering. The department is known for research in variety of fields that include mechanical vibration, robotics, heat transfer, CAD/CAM, precision engineering, metal forming, manufacturing, CFD, industrial refrigeration and cryogenics. The academic programmes of the department reflect not only the core areas of Mechanical Engineering; but also the research specialization of the faculty. The department at present has over one hundred research scholars pursuing the research on diverse fields. All the groups are working in close co-operation while retaining individual identities. Many Research and Development projects being pursued by the faculty are sponsored by Government agencies and private industries. The major sponsors among these projects are BRNS, DST, ARDB, BRFSST and HBL Power Systems.



## A Five Day Short-term course on

### Emerging Trends of Multi- disciplinary Research in Fluid Mechanics

25<sup>th</sup> - 29<sup>th</sup> Sept., 2023

(Through Virtual Mode)

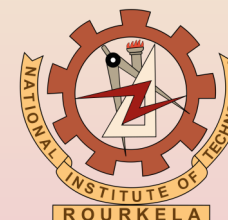
Patron

Prof. K. Umamaheshwar Rao,

Director, NIT Rourkela

Chairman

Prof. S. K. Patel, HoD-ME Dept.



Conveners

Dr. Kishore Singh Patel,

Dr. Bukke Kiran Naik

ME Dept.



## ABOUT THE COURSE

The fundamental shape of research in the field of classical fluid mechanics has changed a lot over a decade and has become truly multidisciplinary. Most of the work focuses on unraveling complex flow physics involved in different areas such as healthcare, atmospheric and oceanographic, aerospace engineering and HPC, clean energy systems and polygenerations, etc. This program focuses primarily on the complex dynamics of biomedical flows in human body. This course aims to get a broader understanding of various emerging trends of ongoing research in the biomedical flows.

## COURSE CONTENT

The course will cover the following major topics;

- Introduction of fluid dynamical research in various multidisciplinary fields.
- Fluid dynamics in a biological system.
- Fluid dynamics inside a small confined channels (microfluidics).
- Multiphase flows (simulations and experiments)
- Meshless techniques in computations
- Fluid structure interactions simulations

## ELIGIBILITY

The course is open for, UG, PG, PhD students and working professionals from different universities, colleges, and organizations. For NIT Rourkela students, registration fees is exempted.

## IMPORTANT DATES

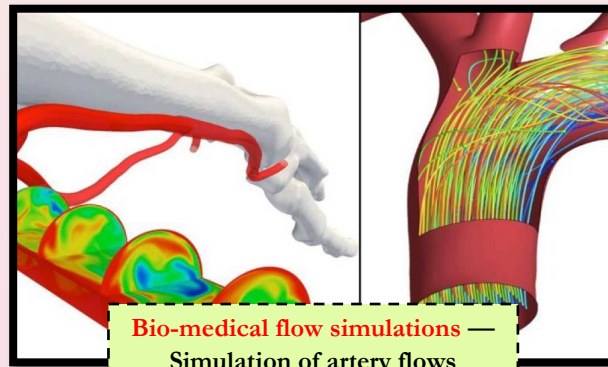
The last date for the receipt of [registration form](#) is 24/09/2023. The joining link, and detailed program schedule will be communicated through email by the late evening of same 24/09/2023.

## ADDRESS FOR CORRESPONDENCE:

**Dr. Kishore Singh Patel, and Dr. B. Kiran Naik**  
**Department of Mechanical Engineering**  
National Institute of Technology, Rourkela  
Rourkela-769 008, Odhisa, India

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9435686059 (Kiran)

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[naikkb@nitrkl.ac.in](mailto:naikkb@nitrkl.ac.in)



Bio-medical flow simulations —  
Simulation of artery flows

REGISTRATION FEES	Rs.500
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## Bank Account Details for Registration Fees

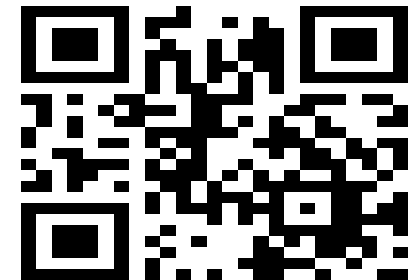
Account Name	CONTINUING EDUCATION, NIT ROURKELA
Account No.	10138951784
Bank	State Bank of India
Branch	NIT Campus Rourkela (02109)
IFSC Code	SBIN0002109

## Registration Form

Google Form Link Provided Below:

<https://forms.gle/rG8pnPTwiBcLcX5s7>

E-certificates will be provided to the registered participants upon successfully completing the course.



**NATIONAL INSTITUTE OF TECHNOLOGY, ROURKELA**  
**Department of Mechanical Engineering**  
**A Short Term Course (STC)**

**on**  
**Emerging Trends of Multidisciplinary Research in Fluid Mechanics**  
**September 25<sup>th</sup>–29<sup>th</sup>, 2023**

**Program Schedule (Tentative)**

Day	9:45 – 10:30 AM	10:30 AM – 12:00 Noon	2:15 PM – 3:45 PM	4:00 PM – 5:30 PM
Day 1 25 Sept	<b>Inauguration session</b>	<b>Lecture 1</b> <b>Dr. Pranab Kumar Mondal</b> Associate Professor, Department of Mechanical Engg., IIT Guwahati <i>(Topic: Microfluids of Plant Biology: Perspective &amp; Potentiality)</i>	<b>Lecture 2</b> <b>Dr. Shyam Sunder Yadav</b> Associate Professor, Department of Mechanical Engg, BITS Pilani. <i>(Topic: Numerical simulation of clot extraction process using Thrombectomy)</i>	<b>Lecture 3</b> <b>Dr. Ravi Kant Avvari</b> Assistant Professor, Department of Biotechnology and Medical Engg., NIT Rourkela.
Day	10:00 AM – 11:30 AM		2:15 PM – 3:45 PM	4:00 PM – 5:30 PM
Day 2 26 Sept	<b>Lecture 4</b> <b>Prof. Sasidhar Kondaraju</b> Associate Professor, School of Mechanical Sciences, IIT Bhubaneswar		<b>Lecture 5</b> <b>Dr. Vignesh T.G.</b> Assistant Professor, Department of Mechanical Engg., IIT Jodhpur. <i>(Topic: Capillary rise in a corner)</i>	<b>Lecture 6</b> <b>Dr. Akhilesh Kumar Sahu</b> Associate Professor, Department of Chemical Engg., NIT Rourkela.
Day 3 27 Sept	<b>Lecture 7</b> <b>Prof. Sudhakar Yograj</b> Assistant Professor, School of Mechanical Sciences, IIT Goa <i>(Topic: Recent developments in artificial compressibility methods for unsteady incompressible flows)</i>		<b>Lecture 8</b> <b>Dr. Vijai Laxmi</b> Assistant Professor, Department of Mechanical Engineering, IIT Indore <i>(Topic: Biological Flows and its applications)</i>	<b>Lecture 9</b> <b>Dr. B. Kiran Naik</b> Assistant Professor, Department of Mechanical Engg., NIT Rourkela.
Day 4 28 Sept	<b>Lecture 10</b> <b>Dr. Kishore Singh Patel</b> Assistant Professor, Department of Mechanical Engg., NIT Rourkela. <i>(Topic: Fluid dynamical analysis of drug delivery in pulmonary airways)</i>		<b>Lecture 11</b> <b>Dr. Prasoon Kumar</b> Assistant Professor, Department of Biotechnology and Medical Engg., NIT Rourkela. <i>(Topic: Manipulating flow through porous media for bioengineering applications)</i>	<b>Lecture 12</b> <b>Mr. Vivek Kumar Singh</b> Scientist-SF, SAC, ISRO Ahmedabad
Day 5 29 Sept	<b>Lecture 13</b> <b>Prof. Arup Kumar Das</b> Associate Professor, Department of Mechanical and Industrial Engg., IIT Roorkee <i>(Topic: Development of Microfluidic Bottle cap for Wastewater treatment and Recovery system of water reuse.)</i>		<b>Lecture 14</b> <b>Dr. Ajay Bhandari</b> Assistant Professor, Department of Mechanical Engineering, IIT Dhanbad <i>(Topic: Image-based insilico and invitro analysis of fluid flow and drug transport in different human tissues.)</i>	<b>Valedictory Section</b>  Final vote of thanks and feedback from the participants.

### Tentative List of Speakers

(1)



**Speaker: Dr. Pranab Kumar Mondal**

Associate Professor, Department of Mechanical Engg.,  
IIT Guwahati

**Area of Research:** Microfluidics, Two-phase transport,  
Microscale Transport of Heat

(2)



**Speakers: Dr. Vijai Laxmi**

Assistant Professor, Department of Mechanical  
Engineering, IIT Indore

**Area of Research:** Microfluidics, Fluid Mechanics

(3)



**Speaker: Prof. Sudhakar Yograj**

Assistant Professor, School of Mechanical Sciences,  
IIT Goa

**Area of Research:** Bio-inspired Fluid Dynamics,  
Computational mechanics, Fluid Structure Interaction,  
Passive Flow Control.

(4)



**Speaker: Dr. Vignesh T.G.**

Assistant Professor, Department of Mechanical Engg.,  
IIT Jodhpur.

**Area of Research:** Microfluidics, Multiphase flows

(5)



**Speaker: Prof. Ajay Bhandari**

Assistant Professor, Department of Mechanical  
Engineering, IIT(ISM) Dhanbad

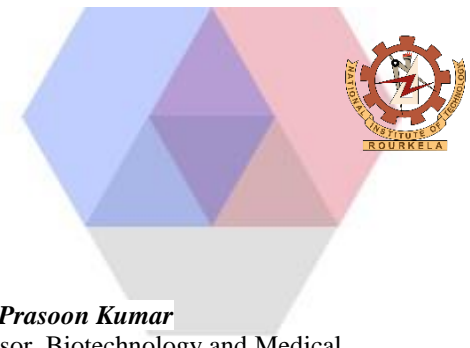
**Area of Research:** Bio-Fluid Mechanics,  
Computational Oncology, Medical-Image Based  
Numerical Modelling, Patient-specific Computational  
Models, Cancer, and Ocular Drug Delivery.

(6)



**Speaker: Mr. Vivek Kumar Singh**

Secretary,  
Space Society of Mechanical Engineers (SSME)  
Scientist/Engineer-SF,  
Thermal Engineering Division  
Space Applications Centre  
Indian Space Research Organization  
Ahmedabad-380015



(7)



**Speaker: Prof. Arup Kumar Das**

Associate Professor, Department of Mechanical and Industrial Engg., IIT Roorkee

**Area of Research:** Multiphase Flow, Microfluids, Bio-fluids

(9)



**Speaker: Prof. Akhilesh Kumar Sahu**

Associate Professor, Department of Chemical Engg., NIT Rourkela.

**Area of Research:** Thin-film dynamics, Interfacial fluid mechanics, Non-Newtonian flows, Computational fluid dynamics

(11)



**Speaker: Prof. Shyam Sunder Yadav**

Associate Professor, Department of Mechanical Engg, BITS Pilani.

**Area of Research:** Computational Fluid Dynamics and Heat Transfer, Two-Phase Flows with Phase Change, Magneto hydrodynamics.

(8)



**Speaker: Prof. Prasoon Kumar**

Assistant Professor, Biotechnology and Medical Engineering, NIT Rourkela.

**Area of Research:** Bio-inspired design, Micro/nano fabrication, Additive manufacturing, Lab-on-chip, Micro/nanofluidics, polymeric membranes, Medical devices innovation and Entrepreneurship.

(10)



**Speaker: Prof. Ravikant Avvari**

Assistant Professor, Department of Biotechnology and Medical Engg, NIT Rourkela.

**Area of Research:** Biomechanics, Biofluid dynamics, Peristalsis.

(11)



**Speaker: Prof. Sasidhar Kondaraju**

Associate Professor, School of Mechanical Sciences, IIT Bhubaneswar

**Area of Research:** Microfluidics; Surface wettability; Interfacial Science; Micro/Nanoscale Heat and Fluid Transport

(12)



**Speaker: Prof. Kishore Singh Patel**

Assistant Professor, Department of Mechanical Engineering, NIT Rourkela.

**Area of Research:** CFD, Multiphase flows, Grid adaptation, Turbulence modeling, DNS of turbulent flows

(13)



**Speaker: Dr. B. Kiran Naik**

Assistant Professor, Department of Mechanical Engineering, NIT Rourkela

**Area of Research:** Thermo-chemical energy conversion and storage, Sorption, desalination system, AI/ML tool for thermal system, Analytical modelling of heat and mass

## **ADDRESS OF CORRESPONDENCE**



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## **Student Coordinators**

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