

PARTICIPATION CERTIFICATE

Dr / Mr / Ms / Mrs.
.....

is a student of our institute and his / her application is hereby nominated. The applicant will be permitted to attend the Karyashala (a high-end workshop) on **“High-Performance Computing and AI Predictive Tools in Fluids and Thermal”** through physical mode in Mechanical Engineering Department at NIT Rourkela during **25th-29th July 2022**, if selected.

Our institute is (tick one):

- ☐ CFTI
☐ State Govt. Funded Institution
☐ Other Institutions

Date..... Signature of Authority
Designation

Official Seal

Selected participants will be informed by E-mail. The duly nominated application form should be uploaded through registration link ([click here](https://forms.gle/mmkbFZynLxKMakHi8)):

<https://forms.gle/mmkbFZynLxKMakHi8>

Organized by
Dr. Kishore Singh Patel (Convener)
Dr. B. Kiran Naik (Co-Convener)
Department of Mechanical Engineering
National Institute of Technology, Rourkela
Rourkela -769 008, Odhisa

Contact Nos. 9945676486 (Kishore)
9435686059 (Kiran)

Emails: patelks@nitrrl.ac.in

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 121st position in QS BRICS category, 2020. Times Higher Education has figured NIT Rourkela in the group of 801-1000 in World University Ranking 2022. 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, DRO-DO, 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, BRFST and HBL Power Systems.



A **Karyashala** (High-End Workshop) **on**

High-Performance Computing and AI Predictive Tools in Fluids and Thermal

July 25 - 29, 2022

(Through Physical Mode)

Patron

Prof. K. Umamaheshwar Rao,
Director, NIT Rourkela

Chairman

Prof. S. K. Sahoo, HOD-ME Dept.
Conveners

Dr. Kishore Singh Patel, ME Dept.
Dr. B. Kiran Naik, ME Dept.



Department of Mechanical Engineering
National Institute of Technology
Rourkela

Sponsored by



[Click here for registration](#)



ABOUT THE COURSE

The computing and predictive techniques in fluid flow and heat transfer are rapidly evolving fields. With the advancement in computing architecture, algorithms, and the use of graphical processing units in scientific computing—popularly known as General Purpose Graphical Processing Unit (GPGPU)—there is a paradigm shift in the field of computing. Moreover, the AI and ML based predictive techniques are opening a new dimension of computations in fluid dynamics. This workshop is aimed to bring a wide overview of emerging cutting-edge research trends of computing in fluid dynamics.

COURSE CONTENT

The course will cover the following major topics;

- Introduction of high-performance computing (HPC) architecture and computing algorithms
- High-fidelity simulations in turbulence.
- Mesh-less and Lagrangian computational model in CFD.
- Simulations and analyses approach of cloud dynamics.
- A broad overview of aerospace CFD.
- Bubble dynamics and their interactions
- Introduction of new scalable scientific computing languages and algorithms.
- Multiphase flow simulations and their application in bio-fluid dynamics.

TRAINING SESSION

The training session will cover the following topics;

- Training session on implementation of ANFIS, KNN, ANN and CNN based Artificial Intelligence/machine learning model for design and performance prediction of thermal systems.
- Heat transfer and fluid flow analysis using the commercial CFD solvers.
- Training session on CPU-GPU, hybrid parallelization techniques

ELIGIBILITY

The course is open for PG and PhD students from universities, colleges, and research organizations. No course fee is charged for PhD and PG students.

IMPORTANT DATES

The last date for the receipt of [registration form](#) is 10/07/2022. Intimation of selection: through email by 15/07/2022

TRAVEL AND ACCOMMODATION

Maximum number of applicants is limited to 25. Selection will be done in first come first serve basis. The selected applicants will be provided a free accommodation at NIT guest house (twin sharing basis) on prior request, and the travel charges (3-AC) of both arrival and departure will be reimbursed.

ADDRESS FOR CORRESPONDENCE:

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Contact Nos. 9945676486 (Kishore)
9435686059 (Kiran)

Emails: patelks@nitrkl.ac.in;
naikkb@nitrkl.ac.in



REGISTRATION FORM

([UPLOAD LINK](#), [CLICK HERE](#)) OR COPY THE LINK

<https://forms.gle/mmkbfZynLxKMakHi8>

1. Name:
2. Designation:Department.....
3. Organisation:
4. Postal Address:
.....
E-mail:
- Mobile No.:
- WhatsApp No:
5. Specialisation:
6. Accommodation Required (Yes/No):
7. ☐ CFTI ☐ State 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 the Karyashala (high-end workshop) on “**High-Performance Computing and AI Predictive Tools in Fluids and Thermal**” to be held at NIT Rourkela, during 25 — 29 July, 2022.

Signature with official seal
(Head of the Department)