



# High Performance Computing



## NSM Sponsored Faculty Development Program on High Performance Computing

Organised by  
Department of CSE, IIIT Nagpur  
&  
CDAC Pune

Under the aegis of National Supercomputing Mission,  
Government of India  
In association with  
Walchand College of Engineering, Sangli  
(NSM Nodal Centre)

**Dates: 10,11,12 January (Online) and 15, 16 January (Offline) 2024**

### Convenors:

Dr. U. A. Dabade, Director WCE Sangli,  
Dr. D. B. Kulkarni, Professor WCE Sangli  
(NSM Nodal centre Head)

### Our Patrons:

Mr. Kailas Dakhale, Registrar IIIT Nagpur  
Dr. Omprakash G. Kakde, Director IIIT Nagpur.

### Coordinators:

Dr. Snehal B. Shinde, Dr. Richa Makhijani, Dr. Nileshchandra Pikle



### About Host Institute

Indian Institute of Information Technology, Nagpur (IIITN) is one of the 20 Indian Institutes of Information Technology established under the Public-Private Partnership Scheme by the Ministry of Education (erstwhile Ministry of Human Resource Development), Government of India. IIITN has been declared as an "Institution of National Importance" under the provisions of the Indian Institute of Information Technology (Public-Private Partnership) Act, 2017. The Institute started functioning during the year 2016-17 and Shifted to its Permanent Campus in Butibori Nagpur under the Department of Higher Education, Ministry of Education, and is supported by the Department of Higher Education, Government of Maharashtra, and Tata Consultancy Services, Mumbai as Industry Partner.

### About Course

The programme will introduce several parallel programming models, including Open Multiprocessing (OpenMP) for shared memory machines, Message Passing Interface (MPI) for distributed memory machines, and Compute Unified Device Architecture (CUDA), a parallel computing platform developed by NVIDIA for exploiting GPU. It will also include hands-on practise on these programming models. It is primarily intended for professors who presently teach or plan to teach HPC-related courses. Researchers who use or plan to use parallel programming are also welcome to attend.

### About Walchand College of Engineering

Walchand College of Engineering Sangli (WCE) was established in 1947 and aided by the Govt. of Maharashtra, is one of the oldest and premier engineering institutions in India with a beautiful campus of over 90 acres. WCE offers 6 UG programs in Civil, Electrical, Mechanical, Electronics, Information Technology and Computer Science & Engineering, 10 PG programs and Ph.D. programs. The institute is also given autonomous status by UGC since 2007.

### Course Objectives

- To introduce the fundamentals of parallel computing including parallel architectures, programming models and commonly used parallel programming constructs/libraries/languages,
- To deliver hands-on sessions to provide experience applying HPC tools on both CPU and GPU platforms.
- To help faculties to include HPC course in the curriculum.

### Course Contents

- Understanding Multicore and Manycore architectures
- Shared Memory Parallelism with OpenMP
- CUDA Programming
- Distributed Memory Parallelism with MPI
- Parallel Computing Patterns: Reduction, Matrix multiplication, convolution etc.
- Profiling sequential and parallel codes
- Performance measures in parallel computing

### Target Audience

The workshop is open for all faculty members, research scholars working in CSE, IT and Electronics departments in universities and engineering colleges in Vidarbha region of Maharashtra. Preference will be given to the applicants from nearby institutes of IIIT Nagpur. The registration is on a 'first come first serve' basis.

### Important Dates

**Registration Open:** 4<sup>th</sup> December 2023

**Last Date of Registration:** 4<sup>th</sup> January 2024

**Course Duration:** 10,11,12 January (Online) and 15, 16 January (Offline) 2024

**Mode of conduct:** Hybrid from 9:00 AM to 4:45 PM

**Registration Fees:** **No registration fees**

**Registration Link:**

<https://forms.gle/pXYya8K7CvKDpwVB9>

### Program benefits

- Interaction with eminent speakers from industry and academia
- Industry certifications of worth **~21,000/- for FREE**
- Access to HPC resources during the FDP
- Travelling Fare (max Rs. 2000), Food and accommodation will be provided in campus during offline sessions

### Organizing Team and Speakers

Mr. Ashish Kuvelkar, Senior Director, CDAC Pune  
Dr. D. B. Kulkarni, Head, NSM Nodal Centre WCE Sangli  
Mr. Mandar Gurav, PhD IIT Bombay  
Dr. Nileshchandra Pikle, Assistant Professor, IIIT Nagpur  
Dr. Tausif Diwan, Assistant Professor, IIIT Nagpur  
Dr. Jitendra Tembhurne, Assistant Professor, IIIT Nagpur  
Dr. Snehal Shinde, Adjunct Assistant Professor, IIIT Nagpur  
Dr. Richa Makhijani, Assistant Professor, IIIT Nagpur  
Dr. Milind Penurkar, Assistant Professor, IIIT Nagpur  
Dr. Jagdish Chakole, Assistant Professor, IIIT Nagpur

### Contact Details

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