

# Faculty Development Program on High Performance Computing

Organized under National Supercomputing Mission

Organized by

**Centre for Development of Advanced Computing, Pune**  
**And**  
**National Institute of Technology, Agartala**

**Venue:** NIT Agartala

**Duration:** Oct 29 – Nov 02, 2018

**Oct 29, 2018**

<b>D A Y  1</b>	Time (Hrs.)	Lecture/Hands-on Session
	09:30 – 11:00	Overview of HPC
	11:00 – 11:15	Tea break
	11:15 – 13:00	Shared Memory Parallelism with OpenMP
	🍴 Lunch Break - 1.00 hr.	
	14:00 – 15:45	Lab Session: Shared Memory Parallelism with OpenMP (Linux and C)
	15:45 – 16:00	Tea break
	16:00 – 17:30	Lab Session: Shared Memory Parallelism with OpenMP (contd...)

**Oct 30, 2018**

<b>D A Y  2</b>	Time (Hrs.)	Lecture/Hands-on Session
	09:30 – 10:00	Insight into HPC systems
	10:00 – 10:30	Parallel Algorithmic Paradigms
	10:30 – 10:45	<b>Tea Break</b>
	10:45 – 11:45	Distributed Memory Parallelism with MPI (Point-to-Point Communication)
	11:45 – 01:00	Lab Session: Distributed Memory Parallelism with MPI (Linux and C)
	🍴 Lunch Break - 1 hr.	
	14:00 – 14:30	Distributed Memory Parallelism with MPI (Collective Communication)
	14:30 – 15:30	Lab Session: Distributed Memory Parallelism with MPI (Linux and C)
	15:30 – 15:45	<b>Tea Break</b>
	15:45 – 17:30	Lab Session: Distributed Memory Parallelism with MPI and OpenMP

**Oct 31, 2018**

<b>D A Y  3</b>	Time (Hrs.)	Lecture/Hands-on Session
	09:30 – 11:00	Case study: Parallelization of Matrix - Matrix Multiplication
	11:00 – 11:15	<b>Tea Break</b>
	11:15 – 12:15	GPGPU architecture and its applications
	12:15 – 13:00	Parallelism with OpenACC
	🍴 <b>Lunch Break - 1.00 hr</b>	
	14:00 – 16:30	Lab Session: Programming with OpenACC (Linux and C)
	16:30 – 16:45	<b>Tea Break</b>
	16:45 – 17:30	Code Profiling and Performance Analysis Tools

**Nov 01, 2018**

<b>D A Y  4</b>	Time (Hrs.)	Lecture/Hands-on Session
	09:30 – 10:30	GPGPU: Parallelism with CUDA
	10:30 – 10:45	<b>Tea Break</b>
	10:45 – 13:00	Lab Session: Programming with CUDA
	🍴 <b>Lunch Break - 1 hr.</b>	
	14:00 – 15:00	<ul style="list-style-type: none"> <li>Execution Environment (compilers, libraries etc.)</li> <li>Installation of HPC applications / libraries</li> <li>Job Scheduling using Cluster Schedulers and Resource Managers</li> </ul>
	15:00 – 15:15	<b>Tea break</b>
	15:15 – 17:30	Lab Session: Programming with CUDA

**Nov 02, 2018**

<b>D A Y  5</b>	Time (Hrs.)	Lecture/Hands-on Session
	09:30 – 10:45	Introduction to Machine Learning and Deep Learning
	10:45 – 11:00	<b>Tea Break</b>
	11:00 – 13:00	Lab Session: Deep Learning with DIGITS
	🍴 <b>Lunch Break - 1 hr.</b>	
	14:00 – 16:00	Lab Sessions: <ul style="list-style-type: none"> <li>Machine Learning algorithms with Sci-kit</li> <li>Deep Learning with Tensor Flow</li> </ul>
	16:00 – 16:15	<b>Tea Break</b>
	16:15 – 17:00	Feedback and Distribution of Certificates