



## Faculty Development programme (FDP)

on

## High Performance Computing, Parallel Programming and Administration

(17<sup>th</sup> July-22<sup>nd</sup> July, 2017)

Organised by

**Electronics & ICT Academy, IIT Roorkee**

**Government of India Initiative for Faculty of Institutes/Colleges in areas of Electronics and Information & Communication Technology (EICT)**

Supported by Ministry of Electronics and Information Technology (MeitY), Govt. of India



### High Performance Computing, Parallel Programming and Administration



**Venue: Inderprastha Engineering College, Ghaziabad.UP.**

### Experts from Academia/Industry

- ❖ Wipro Technologies, Industry Experts
- ❖ Dr. Sudip Roy (IITR)

**Eligibility:** Faculty of engineering/technical institutions and Persons from Govt. departments/labs and industry.

**Course Date:** July 17-22, 2017

**Last Date for Registration:** July 13, 2017

### Course Program

- ❑ The program is split into lectures and labs/hands-on sessions.
- ❑ Course evaluation by quizzes and project work.
- ❑ Hands-on experience on basic & advanced-level topics.
- ❑ Interaction & learning with experts from academia & industry pan India.
- ❑ Certificates with grades to participants by E&ICT Academy IITR.

#### Course Contents:

- ✚ Introduction to HPC and Parallel Programming
- ✚ Compilers & Optimization.
- ✚ Introduction to Accelerators-GPU Programming, Intel Xeon Phi
- ✚ Vectorization
- ✚ OpenMP
- ✚ Message Passing Interface
- ✚ Debugging & Profiling Tools
- ✚ Performance Libraries-IPP, BLAS, LAPACK, MKL, ACML

**Contact Hours:** Six days (Theory, Hands-on, Tutorials)

### Objective of the Courses

- ✓ High-performance computing (HPC) is the use of parallel processing for running advanced application programs efficiently, reliably and quickly.
- ✓ The objective of the course is to provide exhaustive knowledge on High Performance Computing Administration and introduce Parallel Programming to the participants.
- ✓ The focus of the program would be on practical aspects through interactive lab sessions on Cluster Implementation, Administration, Troubleshooting and Programming. Successful case studies and real time use cases would be shared.

### Benefits and Outcomes of the Course

- ❖ The program would help the participants in acquiring the skills needed to implement and maintain the HPC clusters.
- ❖ Participants would also acquire the skills needed to efficiently utilize a HPC cluster through workload management, application installation & benchmarking and knowledge on various components of cluster stack. This would enable them on being updated with the current computation environment and use them effectively.

The course is designed where in the participants will be given a thorough understanding of the following topics:

- ✓ Introduction to High Performance Computing
- ✓ Computer Architecture and Hardware
- ✓ Linux System Administration
- ✓ Shell Scripting
- ✓ Cluster Architecture
- ✓ High Speed Interconnects
- ✓ Cluster Planning, Design & Implementation
- ✓ Workload Management
- ✓ Co-Processors and Accelerators
- ✓ Parallel File System
- ✓ Cluster Benchmarking
- ✓ Programming Shared and Distributed Memory systems





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#### About E&ICT Academy

Ministry of Electronics & Information Technology (MeitY) has set up Electronics and ICT Academies at 07 institutions, namely, IIT Roorkee, IIT Guwahati, IIT Kanpur, NIT Warangal, NIT Patna, IIITDM Jabalpur and MNIT Jaipur. These Academies are aimed at upskilling the faculty of institutes, colleges by organizing faculty training programs in various streams.

#### Activities of the Academies

- Faculty development programmes for
  - Specialized training with hands-on on basic and advanced level topics for engineering streams
  - Domain based training on use of ICT tools and techniques for non-engineering streams
- Training and consultancy services for industry
- Curriculum development for industry
- Continuing Education programme for students / working professionals
- Design, develop and deliver specialized modules for specific research areas
- Providing advice and support for technical incubation and entrepreneurial activities

<b>Seats</b>	<b>40 seats on first-cum-first-serve basis</b> <b>05 seats for research scholars</b>
<b>Duration</b>	6 days, 40 hours
<b>Food &amp; Accommodation</b>	No food, accommodation & travel allowance will be provided. (Only high tea will be provided).
<b>Registration Fee</b>	Faculty Members: Rs. 2,000/- Research scholars: Rs. 1500/- Persons from Industry: Rs. 5,000/-
<b>Payment Details</b>	<b>Demand draft in favor of "Dean SRIC IIT Roorkee" payable at Roorkee</b>
<b>How to Apply</b>	<b>Online:</b> The participant may log on to the E&ICT academy IITR (website: <a href="http://eict.iitr.ac.in">http://eict.iitr.ac.in</a> ) and fill-up the application form. <b>Offline:</b> Email scanned copy of the filled-in Registration form to E&ICT Academy IITR (Email: <a href="mailto:eict@iitr.ac.in">eict@iitr.ac.in</a> , <a href="mailto:eictiitr@gmail.com">eictiitr@gmail.com</a> ).
<b>Contact Details</b>	Dr. Sanjeev Manhas (P.I., E&ICT Academy, ECE Dept, IITR) Ms. Priyanka D. Gupta (Local coordinator, Head EDC, IPEC, Ghaziabad) <a href="mailto:priyanka.gupta@ipec.org.in">priyanka.gupta@ipec.org.in</a> , <a href="mailto:eict@iitr.ac.in">eict@iitr.ac.in</a> Tel: +91-1332-28 6457 : +91-9540038914

#### Registration Form

Name of the Applicant :.....

Gender:.....

Category (Please tick): GEN/OBC/SC/ST

Designation: .....

Name and Address of the Organization/Institute:  
.....

City/Town:.....

Email:.....

Phone Number:.....

Mobile Number:.....

Do you need Accommodation? (Yes/No):.....

DD Number:.....

Date:.....

Issuing Bank:.....

Payable at:.....

Signature of the Applicant:.....

Signature and Seal of the Forwarding Authority  
Name: .....

Designation:.....

Affix stamp size photograph

**A hard copy of the application form along with Demand Draft must reach to the following address:  
Dr. Sanjeev Manhas, EICT Academy, ECE Department, IIT Roorkee, Uttarakhand 247667**

#### For More Information



: <http://eict.iitr.ac.in>

: [eict@iitr.ac.in](mailto:eict@iitr.ac.in)

: <https://www.facebook.com/EICT.IITR>

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