CSIR- National Physical Laboratory
Dr. K. S. Krishnan Marg, New Delhi -110012
Training Calendar 2013-14

GENERAL INSTRUCTIONS

• In case of inadequate number of participants (less than 10), for a particular training programme, CSIR- NPL may drop the execution of that programme. In view of this, before sending the DD, the prospective participants are advised to confirm with the Head, HRD or the concerned Technical Coordinator about its dates and execution.

• For Technical Queries about a training course, the prospective participants may contact the concerned Technical Coordinator.

• Training Fee / Charges: Per Participant:

<table>
<thead>
<tr>
<th></th>
<th>2 Days Course</th>
<th>3 Days Course</th>
<th>4 Days Course</th>
</tr>
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<tbody>
<tr>
<td>Indian Participants</td>
<td>₹16,000</td>
<td>₹24,000</td>
<td>₹32,000</td>
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<tr>
<td>Foreign Participants</td>
<td>US $ 300</td>
<td>US $ 450</td>
<td>US $ 600</td>
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Service Tax applicable.

The Training fee includes Course Material, Training kit, Lunch, Tea / Coffee, etc.

The Training fee should be sent at least two weeks prior to the commencement of the desired training programme, through a Demand Draft drawn in favour of the “DIRECTOR, NATIONAL PHYSICAL LABORATORY”, payable at “NEW DELHI”.

• Lodging & Boarding:

Charges to be borne by the Trainees - As per prevailing rates in the NPL Guest House (Subject to availability)

• For any Enquiries, the participants are advised to contact:
  Dr. Rajeev Chopra
  Senior Principal Scientist & Head, HRD
  National Physical Laboratory, New Delhi – 110012
  Ph.: 91-11- 4560 9366, 4560 9361 (O)
  e-mail : hrd@nplindia.org

TRAINING SCHEDULE

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Title of Training Programme</th>
<th>Date &amp; Duration</th>
<th>Content of Programme</th>
<th>Technical Co-ordinator (s) with Contact Details</th>
</tr>
</thead>
</table>
  kpc@nplindia.org
  011-4560 8673
  Sh. Virendra Babu
  virendra_babu@nplindia.org
  011-4560 8676 |
| 2.   | Modern Techniques and Methods of Environmental Monitoring | 9-11 July 2013 (3 Days) | Fundamental of Spectroscopy and Spectroscopic & other measurement techniques along with overview of instruments used in atmospheric monitoring, Aerosols & Radiation Forcing, Basic Principal in Emission Inventory Development, Element of quality assurance/quality control | Dr. M.V.S.N. Prasad
  mvprasad@nplindia.org
  011-4560 8378
  Dr. C. Sharma
  csharma@nplindia.org
  011-4560 9387 |
| 3.   | Workshop on Advanced Materials Characterization Techniques | 23-26 July, 2013 (4 Days) | Familiarization & demonstration of various Materials Characterization Techniques, such as – XRD, XRF, HRXRD, XRR, SEM, TEM, EPR, HRTEM, SIMS etc. | Dr. G Bhagavannarayana
  bhagavan@nplindia.org
  011-4560 8261
  Dr. Sukhvir Singh
  sukhvir@nplindia.org
  011-4560 8394 |
<table>
<thead>
<tr>
<th>No.</th>
<th>Course Title</th>
<th>Dates</th>
<th>Description</th>
</tr>
</thead>
</table>
|     |              |       | Mr. A.K. Saxena aksaxena@nplindia.org 011-4560 9314  
Sh. Anil Kumar kumarak1@nplindia.com 011-4560 8348 |
|     |              |       | Sh. Anil Kumar kumarak1@nplindia.com 011-4560 8348  
Sh. Gautam Mandal goutam@nplindia.org 011-4560 9367 |
|     |              |       | Dr. S.K. Jain skjain@nplindia.org 011-4560 8232  
Dr. S.S.K. Titus titus@nplindia.org 011-4560 8674 |
| 7   | Metrology in Chemistry (MiC) | 17-19 September 2013 (3 Days) | (1) Atomic Absorption Spectrometry (AAS) for trace elemental analysis, (2) Measurement uncertainty, (3) Inter-laboratory comparisons, (4) reference materials, (5) Validation and quality control (6) Traceability in Chemistry |
|     |              |       | Mr. Prabhat K. Gupta prabhat@nplindia.org 011-4560 8232  
Dr. Shankar G. Aggarwal aggarwalsg@nplindia.org 011-45608376 |
|     |              |       | Dr. H.C. Kandpal hckandpal@nplindia.org 011-4560 8315  
Dr. Ranjana Mehrotra ranjana@nplindia.org 011-4560 8366 |
| 9   | Temperature Standards and Metrology | 29 Oct-01 Nov. 2013 (4 Days) | (1) Lectures on Basic concepts in temperature metrology, Importance of International Temperature Scales, ITS-90, Realization of Temperature Fixed Points, Calibration and practices in temperature metrology related to SPRT, LIGT, TCs and Pyrometry, Instrumentation, Measurement techniques and procedure for uncertainty evaluation in the Temperature related metrology and Hygrometry, (2) Practical Demonstration & Training on Calibration procedures, calculations, reports etc. for LIG Thermometers, SPRTs, RTDs Thermocouples, Hygrometers and Pyrometers, Estimation & reporting of Uncertainty in the temperature and humidity related metrology. |
|     |              |       | Dr. Y.P. Singh ypsingh@nplindia.org 011-45609390  
Dr. D.D. Shivagan shivagan@nplindia.org 011-45609390 |
<table>
<thead>
<tr>
<th>Course</th>
<th>Dates</th>
<th>Description</th>
<th>Instructors</th>
</tr>
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<tbody>
<tr>
<td>10. Time &amp; Frequency Measurements</td>
<td>19-21 November 2013 (3 Days)</td>
<td>(1) General Introduction of Time &amp; Frequency Measurements (2) Fundamental of Atomic Clock (3) Time Scale, Uncertainty and Stability (4) Calibration Techniques (5) Teleclock Service (6) Cesium Fountain Frequency Standard (7) Rubidium Atomic Clock</td>
<td>Dr. Ashish Agarwal <a href="mailto:ashish@nplindia.org">ashish@nplindia.org</a> 011-4560 8384 Ms. Pranalee P. Thorat <a href="mailto:thoratpp@nplindia.org">thoratpp@nplindia.org</a> 011-4560 9323 Mr. Anil Kumar Suri <a href="mailto:anilsuri@nplindia.org">anilsuri@nplindia.org</a> 011-4560 8601</td>
</tr>
<tr>
<td>11. Dimensional Metrology</td>
<td>27-29 November 2013 (3 Days)</td>
<td>Basics of Metrology, Calibration Practice in Dimensional Metrology-Calibration of gauge blocks, surface plates, length measuring machines, Angle Metrology, Coordinate Metrology.</td>
<td>Dr. K. P. Chaudhary <a href="mailto:kpc@nplindia.org">kpc@nplindia.org</a> 011-4560 8673 Sh. Virendra Babu <a href="mailto:virendra_babu@nplindia.org">virendra_babu@nplindia.org</a> 011-4560 8676</td>
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<tr>
<td>12. Electrical Metrology &amp; Low Level DC Measurements</td>
<td>04-06 December 2013 (3 Days)</td>
<td>AC Power and Energy, AC High Voltage and Current, LF Voltage &amp; Current, Microwave, LF Impedance, DC Voltage, Current &amp; Resistance, Low Level DC Measurements</td>
<td>Mr. A.K. Saxena <a href="mailto:aksaxena@nplindia.org">aksaxena@nplindia.org</a> 011-45609314 Mr. M.A. Ansari <a href="mailto:ansari@nplindia.org">ansari@nplindia.org</a> 011-45609317 Mr. Saood Ahmed <a href="mailto:ahmads@nplindia.org">ahmads@nplindia.org</a> 011-45609312 Mr. M.K. Mittal <a href="mailto:mkmittal@nplindia.org">mkmittal@nplindia.org</a></td>
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<tr>
<td>13. Pneumatic and Hydraulic Pressure Standards and Procedures for Calibration of Industrial gauges, Transducers and Dead weight testers</td>
<td>16-17 January 2014 (2 Days)</td>
<td>Measurement of Pneumatic and Hydraulic Pressure, Primary and Secondary Pressure Standards and Calibration Procedures of Industrial Pressure Gauges.</td>
<td>Dr. Sanjay Yadav <a href="mailto:syadav@nplindia.org">syadav@nplindia.org</a> 011-4560 8526 Dr. Nita Dilawar <a href="mailto:ndilawar@nplindia.org">ndilawar@nplindia.org</a> 011-4560 8488</td>
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