

*STC on FiPA-2016*, May 16-20, National Institute of Technology Durgapur, India

TEQIP-II Sponsored SHORT TERM COURSE on  
**Foundations in Photonics and Applications (FiPA-2016)**

May 16-20, 2016



**Course Coordinators:**

Prof. P. Kumbhakar, Dr. M. K. Mandal & Dr. A. Mondal

**Department of Physics  
National Institute of Technology Durgapur  
Mahatma Gandhi Avenue  
Durgapur 713 209**

**Please send the completed application form together with the scanned copy of the demand draft to the Course Coordinator on or before 09<sup>th</sup> May 2016**

## THE INSTITUTE

National Institute of Technology Durgapur (NITD) is a leading technical institute offering undergraduate, postgraduate and doctoral programmes in various disciplines of science, engineering technology, Social sciences and Management. The education system is holistic with equal importance being attached to all-round development of the students. NITD was established as a Regional Engineering College (REC) in 1960 as a joint venture of the Government of India and Government of West Bengal. REC Durgapur was converted to NIT Durgapur under the full administrative and financial control of the Ministry of Human Resource Development (MHRD), Government of India with a Deemed University status on 3rd July, 2003. Subsequently NITD has been given the status of a University by the UGC Act. NITD is an **Institute of National Importance** declared by the Government of India on August 15, 2007.

The city of Durgapur is recognized as one of the fastest developing Tier-II cities in the national scenarios. Durgapur is situated at a distance of about 180 KMs from Kolkata. It is located right on the major railway and expressway (NH-2) connecting Kolkata to Delhi and Durgapur can be reached from Kolkata (and vice versa) in ~ 2 hrs. 30 mins.

## THE DEPARTMENT

Department of Physics of NIT Durgapur is one of the oldest and leading Departments in terms of research activities and sponsored projects. The Department, over the years, has successfully completed a number of MHRD, AICTE, DAE and DST Research and Development projects as well as a number of sponsored projects. A good number of Ph.D. degrees have been awarded under the supervision of the faculty members of the Department and a number of students are working at present for their Ph.D. degrees. Theoretical and experimental investigations are being carried out in the frontier areas like Photonics, Nanoscience, Carbon Nanotubes and Graphene, CNT Hybrids and Composites, MD Simulation of Nanomaterials, Nonlinear Optics, Conducting Polymers, Nanocomposites and Thin Films, Magnetic Ferrite Materials, Nonlinear Dynamics, Liquid Crystals, High Energy Physics, Study on Helium and Geothermal Exploration and Earthquake Precursors etc. The Department offers M.Sc. (Physics) and M. Tech. (Advanced Materials Science and Technology) courses.

## ABOUT THE SHORT TERM COURSE FiPA-2016

There is multitude of applications of optics in our daily life. The application of optics has increased immensely after the invention of LASER in the year 1960. There has been a renaissance in the field of optics and optoelectronics. Now-a-days, the applications of laser is not only restricted in the field of scientific research and development but also it has spread its applicable potentiality in our daily life. Recently a new area of science of technology has emerged, namely Photonics. Photonics is the science and technology of generating and controlling photons – particles of light. The applications of photonics cover many disciplines, with the single aim of harnessing the photon in the fields such as optics, materials science, electrical engineering, nanotechnology, physics and chemistry. The 20th century is often called the century of the electron because of the technological breakthroughs enabled by the electron. It is likely that the 21st century will be known as the century of the photon. The application of photonics in technology is as diverse as that in science. The impact of photonics technology in our daily lives is immense. Photonics technology enables the processing, storage, transport and visualization of huge masses of data. In manufacturing, laser light is used as a fast and precise tool for cutting, welding and scribing. Laser manufacturing is used for objects as large as huge ocean-going tankers to tiny nano structures. Innovative lighting systems create convenient surroundings and save energy. In the present ‘information era’, the high speed and efficient communication of huge information have been made possible due to the advancement in the

field of optical communication in terms of development of good quality small size optical sources, optical detectors and very low loss optical fiber for guiding the optical signals. Laser light is used to control and to study dynamics of chemical reactions also. Laser sources have important roles to play in nanoscience and nanotechnology for the study and development of nanotechnology materials and devices for our well-being. An important scientific research is going on all over the globe for the development of high speed optical computer by developing integrated small scale laser based devices.

### TOPICS TO BE COVERED

- Introduction to Photonics and Photonic Devices and their Applications in Daily Life.
- Fundamentals of Laser Light and Principles of Operation of Laser Sources.
- Introduction to Optical Fiber, Detectors and Optical Communications.
- Introduction to Nonlinear Optics and Techniques for Generation of Tunable Laser Radiations.
- Applications of Laser in Materials Science; Synthesis of Nanomaterials, Measurement of Nonlinear Optical Properties of Nanomaterials etc.
- Applications of Laser along-with other Spectroscopic (or non-spectroscopic) Instruments in Resolving Energy Crisis and Diseases etc.
- Introduction to Optical Instrument
- Applications of Laser in High Voltage Engineering.
- Optical Fiber Sensors.
- Introduction to Optical Computing.

### RESOURCE PERSONS

The resource persons constitutes experts/senior faculty members from NIT Durgapur and various guest speakers from other reputed institutions and industries including ISM, Universities, IIT, IISc., CSIR Laboratories, Research Institutes, etc.

### WHO CAN ATTEND FiPA-2016

FiPA-2016 is aimed to attract and bring together Faculty Members, Scientists, Engineers, Technologists, Research Scholars and Final Year PG students from Academic and Research Institutions and Industries. The participants will benefit immensely and will get new insights and knowledge about the topic through close interactions/discussions with the Senior Faculty Members/Scientists and Experts of the respective field during the lecture sessions as well as in some laboratory sessions.

### BOARDING & LODGING

Boarding, lodging and travel expenses shall be borne by the participants. Limited shared accommodations are available in the Institute Guest House on first come first served basis. Several good hotels are available in and around Durgapur. Participants may contact directly or through the coordinator(s) for accommodation in Hotels. No TA/DA will be paid to the participants by NIT Durgapur.

### REGISTRATION FEES

A. Faculty/Staff Member of Academic Institutes	Rs. 3,500/-
B. Research Institutes/Industries	Rs. 5,000/-
C. Research Scholars & Students	Rs. 2,500/-

*Registration fee includes study/lecture materials, refreshment and lunch for 5 days during the course.*

**REGISTRATION FORM**  
**TEQIP-II Sponsored one week Short Term Course on**  
**Foundations in Photonics and Applications (FiPA-2016)**  
**May 16-20, 2016**

Dept. of Physics, National Institute of Technology, Durgapur  
M.G. Avenue, Durgapur – 723109,  
West Bengal, India

1. Name: -----
2. Designation & Affiliation: -----
3. Male/Female:-----
4. Mailing Address:-----
5. Telephone No. : \_\_\_\_\_ ( R)\_\_\_\_\_ ( O), \_\_\_\_\_ ( M)
6. E-mail ID : -----
7. Highest Academic Qualification:-----
8. Working Experience (In nos. of Years): -----
9. Accommodation required (Y/N):-----
10. Registration fees: DD/Cheque No. \_\_\_\_\_ Date \_\_\_\_\_ Amount \_\_\_\_\_

(DD/Cheque should be in favor of "NITD PHY STC", payable at Durgapur; Account No: 33116861035, IFSC Code:SBIN0002108)

11. Vegetarian / Non-Vegetarian: -----

*N.B.: Please ensure that all the fields (1 to 11) are properly filled-in and then duly signed. Photocopy of this form may also be used for registration.*

Place: \_\_\_\_\_

*Signature of the Applicant*

Date: \_\_\_\_\_

*Signature and Seal of the Head of the Department/Institute*

***Please send the completed application form together with the scanned copy of the demand draft to the Course Coordinator on or before 09<sup>th</sup> May 2016 by E-mail.***

**CORRESPONDING ADDRESS**

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