TEQIP-II Sponsored

SHORT TERM COURSE

on

Fundamentals of Photonics and Optoelectronics (FuPO-2014)

May 14 -18, 2014

Course Coordinators:
Prof. P. Kumbhakar
&
Dr. M. K. Mandal
Department of Physics
National Institute of TechnologyDurgapur
Mahatma Gandhi Avenue
Durgapur 713 209

DEADLINES:
Submission of Registration form for Participation in the course: April 11, 2014 (Early Bid)
Submission of Abstract (optional) for Poster Presentation: May 2nd, 2014

THE INSTITUTE

National Institute of Technology Durgapur (NITD) is a leading technical institute offering undergraduate, postgraduate and doctoral programmes in various disciplines of engineering, technology, science, social science 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 of 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. The Institute was declared an **Institute of National Importance** 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 Nanoscience, Carbon Nanotubes and Graphene, CNT Hybrids and Composites, MD Simulation of Nanomaterials, Nanophotonics, Nonlinear Optics, Conducting Polymers, Nanocomposites and Thin Films, Magnetic Ferrite Materials, Nonlinear Dynamics, Liquid Crystals, High Energy Physics etc. The Department of Physics offers basic courses in Engineering Physics, Engineering Thermodynamics, Materials Science, Semiconductor Physics, Nuclear Reactor Physics etc. The Department also offers M.Sc. (Physics) and M. Tech. (Advanced Materials Science and Technology) courses. Many students who have received their M. Tech degrees from this Department are serving now in different Institutes of higher learning in India.

ABOUT THE SHORT TERM COURSE FuPO-2014

Development in Materials Sciences has already played pivotal role in the advancement of civilizations. And with the advancements in materials growth technology there has been a renaissance in the field of Optics and Optoelectronics and there exists a lot of scope for innovation in future. Now-a-days, the applications of laser, an optoelectronic sources of light, 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 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.

Photonics will play important role in the development of nanoscience and nanotechnology for the study and development of nanomaterials, 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. Therefore, the present subject of the course is extremely important in today's scenario. This short term course will provide an introductory overview of the photonics, materials, laser, optical fiber, detectors etc. Different applications of photonic in different cutting edge research areas of nanotechnology, optical computing and optical communications will be introduced.

The One of the important objectives of this short term Course is to bring Researchers and Technocrats from different parts of our country to a common gathering to share and disseminate the fundamental knowledge and information about the recent developments in Photonics Technology.

Besides the invited talks by the resource persons, there will be poster presentations covering the theme of the course**. Three best posters will be awarded.**

TOPICS TO BE COVERED

- Fundamentals of Photonics and Photonic Devices.
- Principles of Operations of LED, Laser.
- Introduction to Optical Fiber, Detectors, Optical Communications and Sensors.
- Nonlinear Optical Techniques for Generation of Tunable Laser Radiations.
- Applications of Laser in Materials Science.
- Fundamentals and Synthesis of Nanomaterials for Photonics Applications.
- Applications of Laser in Energy Generation Devices and Medicine.
- Introduction to Optical Computing.
- Introduction and Practical Use of Optical Instruments, such as Spectrophotometer, Spectroflurimeter, FTIR, Abbe Refractometer etc.

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, BARC Mumbai etc.

WHO SHOULD ATTEND?

- Faculty Members
- Scientists, Engineers
- Technicians, Technical Staff Members
- Research Scholars, PG Student
- Those who working in the field of Optics or want to start research work in the Areas of Optoelectronics/Optoelectronic Networking/Nanophotonics etc.

FuPO-2014 is aimed to attract and bring together Faculty Members/Scientists/Engineers/Technologists/Research Scholars/Final Year PG students from Academic/Research Institutions and Industries recognized by AICTE, UGC, equivalent. The participants will be immensely benefited 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/hands-on practice 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

Category	**Early Bird registration (Before 11th April, 2014) INR**	**Late Registration (After 11th April, 2014) INR**
Faculty/Staff Member/ Scientists of Academic/Research Institutes	4000	5000
Research Scholars/ Students	2500	3500
Scientist/Engineers from Industries	8000	9000

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

Patron: Prof. T. Kumar, Director, NIT Durgapur

Advisory Committee:
Prof. P. P. Gupta, Dean (R&C)
Prof. K. C. Ghanta, Coordinator TEQIP-II
Prof. B. Halder, Nodal Officer (Academic) TEQIP-II
Col. (Retd.) P. S. Sandhu (Registrar)

Course Coordinators:
Prof. P. Kumbhakar &
Dr. M. K. Mandal

Members:
Prof. A. K. Meikap
Dr. A. K. Chakraborty
Dr. S. Sahoo
Dr. S. Basu

Submission of Abstract for Poster Session:
Deadline of Abstract Submission:-May 2, 2014
Acceptance of Abstract: May. 6, 2014

Those who are not willing to present their paper they are also invited to attend the short term course.

Guidelines for preparing the Abstract, Display of Poster and Submission of Abstract
Extended abstract
A word file of the Title (font size 14, bold, centered, Times New Roman), author's name(s), affiliation, email id, followed by and an extended abstract text (font size 12, single space, Times New Roman) ***NOT exceeding one page*** (including graphics/figures/tables/references etc) on A4 size paper with one inch margin on each side may be sent by e-mail. **Participants are requested to prepare the abstract by using the TEMPLATE. The format is given below**.

REGISTRATION FORM

TEQIP-II Sponsored One Week Short Term Course on

Fundamentals of Photonics and Optoelectronics (FuPO-2014)

May 14 -18, 2014

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./Account Transfer Ref./ ____ Date _____Amount _____
(DD/Cheque should be drawn 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 before the Deadline by E-mail.

CORRESPONDING ADDRESS
Department of Physics
National Institute of Technology,
M. G. Avenue, Durgapur – 713209, West Bengal, India.
Phone : +91 343 2546808 (O), +91 9434788090 (M), +91 9434788050 (M)
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INSTRUCTIONS FOR AUTHORS FORMAT FOR PREPARING ONE PAGE EXTENDED ABSTRACT

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ABSTRACT

The maximum page limit of extended abstract is one A-4 size page, including figures/ tables/ equations/ references typed in a double column preferably in MS Word. The title of the paper should be bold and in all capital, 12 point font size and in NEW TIMES ROMAN font.

I. INTRODUCTION

Authors should submit the Extended Abstract as mentioned on the rules document prior to the deadline. Names of the authors to be in 12 point font size, their addresses and text have to be in 10 point font size and in NEW TIMES ROMAN font. Presenting author is underlined. Single inter-line spacing should be used for the text portion. The short abstract is limited to 50 words only. The name of the corresponding author should be marked with superscript (∗). Please send the Extended ABSTRACT (doc files only, docx file is not acceptable) by e-mail attachment to. The Extended Abstract must be written in English. Text should be left and right justified in the page with 1 inch margin to each edge of the paper. Neither text, nor figures or tables should be printed outside these margins. Extended Abstracts are necessary for competition since they may be used for screening purposes, depending on the number of papers received. Please see judging criteria section on Competition Rules. Extended Abstract should be written following the format of MSWord. All are required to write an extended abstract summarizing the results of his/her research.

All texts should be single spaced, in Times New Roman, 11pt font size consistently. The Extended Abstract begins with a short introduction and ends with a conclusion section. Do not use foot notes. References should be cited uniformly.[1]

II. RESULTS

All figures should be numbered consecutively and captioned. The caption title should be written centered, with upper and lower case letters. A space should separate the figure from the caption, and a space should separate the upper part of the figure and the bottom of the caption from the surrounding text. Figures may be included in the text or added at the bottom of the Extended Abstract.

III. CONCLUSIONS

Acknowledgement

References

1. Mandal, M., and Kumbhakar, P., *Earthquake Engineering and Structural Dynamics*, Vol. 15, pp. 91, (2013)

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