

Chief Patron

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Chairman, GC&EB, IIT(ISM), Dhanbad

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**Five Days
Short Term Course**

**Current Trends in
Lightwave Technology**

Scheduled Date
26 to 30 December 2017



ORGANIZED BY
**Department of Electronics
Engineering**

**Indian Institute of Technology
(Indian School of Mines)
Dhanbad, Jharkhand, India**

**Five Days
Short Term Course
on**

**Current Trends in Lightwave
Technology**

Scheduled Date
26 to 30 December 2017

REGISTRATION FORM

Name:

Designation:.....

Sex (M/F):

Organization:

Address:.....
.....

Phone/Fax:

Email:

Details of Bank Draft:

Amount Rs.

Draft No.:Dated:

Issuing Bank:

Date:

Signature

Importance and scope

Optics is playing an increasingly important role in science and engineering today. Since the invention of the laser, there has been extensive growth, and prolific research and development in optics. There is multitude of applications of optics in our daily life. 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 Daly life. Entirely new fields within applied science and technology, such as remote sensing, nonlinear optics, fiber optics, and integrated optics, have opened up, and old subfields of engineering, such as communications, computers, and systems have been greatly extended. Individuals with advanced training and education in optical science and engineering are in greater demand today than ever before. There are more jobs and challenging technical positions in both government and industrial sectors for work in optics. Applications to military and non-military problems are much more numerous. In order to cater the needs of a growing industry and government involvement in optics and optical systems, this short term course will provides the essential background in photonics necessary to understand modern photonic and fiber-optic systems. The goal of this course is to expose students to essential optical measurement techniques to develop useful skills and enhance and complement their theoretical understanding of optics.

Topics to be covered

- ❖ Review aspects of electromagnetic theory that are important to optics including properties elementary electromagnetic waves and properties of dielectric media.
- ❖ Basic properties of semiconductors and fundamental understanding of the interaction of photons with the mobile charge carriers (electrons and holes).
- ❖ Light wave fundamentals: Propagation of light waves, optical mode configuration, losses, and dispersion
- ❖ Development of mathematical framework for propagation of polarized light in a variety of optical media (anisotropic media, media with optical activity and liquid crystals) and polarization devices (polarizers, wave retarders and polarization rotators).
- ❖ Basics of fiber optic interconnects, light emitting diodes, lasers, photodetectors, efficient modulation and demodulation methods, and high-speed transceiver design.
- ❖ Study of nonlinear optical media that includes second-order and third-order nonlinear optics.
- ❖ Design of fiber optic links. Both short and long haul systems are analyzed. Systems design issues that are addressed include: loss-limited and dispersion limited systems, power budget, risetime budget and sources of power penalty.

Software and Hardware Demonstration

Software Demo: Opti-Grating, Opti-Fiber, Opti-system, COMSOL Multi-Physics Modeling Software

Hardware Demo: He-Ne Laser, Fiber Bragg Grating and Light Runner Kit

About the institution

The Indian Institute of Technology (ISM) was formally opened on 9th December 1926, by Lord Irwin, the then Viceroy of India to address the need for trained manpower related to mining activities in the country with disciplines of Mining and Applied Geology. In 1967 it was granted the status of a deemed to be university under Section 3 of UGC Act, 1956. Situated in the heart of the country's prime coking coal belt, 260 kms from Kolkata with a campus spread over an area of 393 acres, (with 218 acres of existing campus and 175 acres under acquisition and development) the fully residential ISM has all the facilities of world class academic institute. What started as an institution to impart mining education has graduated into a full-fledged B. Tech., M. Tech., M. Sc. Tech., and MBA. In addition, the School offers M. technical institution of international acclaim offering a host of programs like Phil. and full as well as part time Ph.D. programs, while also awarding D.Sc. as the highest degree of academic Achievement.

Accommodation

Accommodation will be provided on payment basis subject to availability

Eligibility Criteria

Participants from R&D Organizations / Faculties, Research Scholars and Technical Staffs Members of Universities, Institutes and AICTE approved engineering colleges.

Registration

Participants from R&D Organizations / Faculties and Technical Staffs Members of Universities, Institutes and AICTE approved engineering colleges have to pay **Rs. 25,000**.

B.Tech, M.Tech and Ph.D students (other than ISM) have to pay **Rs. 8,000**.

The payment have to be in the form of account payee **Demand Draft** drawn in favor of "**Registrar, Indian Institute of Technology (ISM)**" payable at **SBI, ISM Campus Branch, Dhanbad** (Branch Code – 1641) or in the form of electronic payment:

A/C holder: Registrar, Indian Institute of Technology (ISM), Dhanbad

Bank Name: Canara Bank Seraidhela, Dhanbad
Branch Code: 0986, **A/C No.:** 0986101009746, **IFSC:** CNRB0000986

A duly filled registration form along with Demand Draft or e-payment slip should be sent to coordinators on or before **20th December 2017** by COURIER/SPEED POST. **However the participation fees for IIT(ISM) students will be Rs. 500 (Total internal participants from IIT(ISM) Dhanbad cannot be more than 20% of the total number of external participants).** Scanned copy of the filled-in registration form should be sent by email. **Certificates will be issued only after the completion of the program.**

Venue

Executive Development Center (EDC)
Indian Institute of Technology (ISM)
DHANBAD – 826004, JHARKHAND

Website

www.ismdhanbad.ac.in/ei@ismdhanbad.ac.in