

## Introduction

An important initiative has been taken by IIT Bombay to work with Engineering Colleges in the country, to enhance the teaching skills of our faculty colleagues in core Engineering and Science Subjects. Under this project called "Empowerment of Students & Teachers through Synchronous & Asynchronous Instruction," IIT Bombay conducts two-week ISTE workshops during the vacation period in summer and winter. Live lectures are given by IIT faculty. The participating teachers attend at a remote center close to their own college, and also attend tutorial and lab

sessions conducted in the same center. The lecture transmission and live interaction takes place through distance mode using the AVIEW technology and the internet, at selected remote centers across the country.

This initiative is part of the National Mission on Education through ICT, supported by MHRD. Faculty coordinators are appointed at each remote center, to handle the technology infrastructure and other operational logistics. Additionally, for each workshop, there is a workshop faculty coordinator for that subject who will help in the conduct of labs and tutorials at that center.

We invite expert faculty from various remote centers for a five-day Coordinators' training workshop which is held in IIT Bombay, before the main workshop. These Coordinators then act as Workshop Coordinators during the main workshop, liaising between the participants at their Remote Centers and IIT Bombay from where the workshop is transmitted live. During the main workshop, the Workshop Coordinator at every center supervises the conduct of tutorials and Labs. All the lectures and tutorial sessions are recorded. The final edited audio-visual contents, along with other course material will be released under Open Source.

These contents can be freely used later by all teachers and students.

Since December 2009, we have conducted two-week

ISTE workshops on "Effective teaching/ learning of Computer Programming," "Database Management Systems," "Basic Electronics," "Thermodynamics," "Software Development Techniques for Teachers of Engineering and Science Colleges," "Heat Transfer," "Solar Photovoltaics", "Introduction to Research Methodology", "Engineering Thermodynamics" and Research Methods in Educational Technology." We have reached more than 30500 teachers and helped them to enhance their teaching skills at around 300 distinct Remote Centers across the country.

In the backdrop of the success of these workshops, we now announce another two-week ISTE workshop during June 4-14, 2013 on Analog Electronics.

## Teaching Faculty

**Prof. Anindya Sundar Dhar**, Department of Electronics & Electrical Communication Engineering, IIT Kharagpur, <http://www.ecdept.iitkgp.ernet.in/index.php/home/faculty/asd>

**Prof. Pradip Mandal**, Department of Electronics & Electrical Communication Engineering, IIT Kharagpur. <http://www.ecdept.iitkgp.ernet.in/index.php/home/faculty/pradip>

**Prof. Indrajit Chakrabarti**, Department of Electronics & Electrical Communication Engineering, IIT Kharagpur. <http://www.ecdept.iitkgp.ernet.in/index.php/home/faculty/indrajit>

**Prof. Achintya Halder**, Department of Electronics & Electrical Communication Engineering, IIT Kharagpur <http://www.ecdept.iitkgp.ernet.in/index.php/home/faculty/achintya>

## Duration and Venue

The duration of the workshop is 2 weeks (10 working days). It will begin on Tuesday 4th June, 2013 and will end on 14th June, 2013 with a day break on Sunday 9th June only. Additional contributions from participants are required to be made within the following two weeks.

The details and enrolment link are available on the website <http://www.nmeict.iitkgp.ernet.in>

The venues for the workshop will be more than 200 remote centres. The list of all the participating remote centres is given along with the online registration form.

## Who may benefit

The workshop will benefit faculty colleagues who are teaching Analog Electronics and/or related subjects at the undergraduate or the postgraduate level.

## Important Note:

It is mandatory that while registering for the workshop, the participants should submit a scanned copy of a letter from the principal/ Head of the Institute mentioning in our pre-format letter. Registration without this letter will not be considered.

## Note

Please note that this workshop is conducted under the CEP IIT Kharagpur. Live recording of the course and other created contents will be released under Open Source through a portal. The recorded CD/DVD of the course lectures will be available for distribution, at cost, to any individual or institution. All participants are required to sign an undertaking for such release of contents contributed by them during and after the workshop. The recognition and citation will naturally be made for all contributors.

## Accommodation and other support for outstation participants

Remote centres are being funded to provide tea/ lunch on each day of the workshop, and for accommodation, wherever available, for a limited number of outstation participants. Travel expenses up to Rs.1000/- one way will be reimbursed against proof of actual

expenditure, for participants beyond a distance of 100km from the remote centre.

### Course Fee

Since the workshop is partly funded by the National Mission on Education through ICT (MHRD, Government of India), there is no course fee for participation.

### How to Apply

Those wishing to attend this course should register online at <http://www.nmeict.iitkgp.ernet.in/Analogmain.htm>

**Enrollment will be strictly online.**

### LAST DATE FOR ONLINE ENROLLMENT:

**20th May, 2013**

Enroll online at

<http://www.nmeict.iitkgp.ernet.in/Analogmain.htm>

### Address for Communication:

Administration Team,  
Project "EIT", IIT Kharagpur,  
Vikramshila Building,  
Ground Floor, Kalidas Auditorium,  
IIT Kharagpur, Kharagpur-721302,  
West Bengal,  
Tel: +91 3222 281497/ 281070

### Course Content

#### Semiconductor Devices (BJT and MOSFET):

Operations and characteristics, low frequency and high frequency models.

**Single stage amplifiers:** Common emitter and common source amplifier, Common base and common gate amplifier, Common collector and common drain amplifier; frequency response, concept of active load.

**Multi stage amplifiers:** Cascaded amplifier stages; CE-CE, CE-CB, CE-CC, CC-CC amplifier.

**Current mirror:** Simple and cascade using BJT and MOSFET.

**Differential amplifier:** Double ended and single ended differential amplifiers using BJT and MOSFET.

**Feedback:** Basic configurations and practical amplifier circuits using negative feedback.

**Stability and Oscillators:** Stability analysis, phase margin and gain margin, positive feedback, RC and LC oscillators.

**Power amplifiers:** Class A, Class B, Class AB and Class C amplifiers, Practical power amplifier circuits.

### REMOTE CENTER

The Sona Nodal center was inaugurated by Dr. J. Abdul Kalam in the year 2009. Sona College was chosen as a remote center by IIT Bombay when the initiation to conduct live lectures through distant mode was taken. Since December 2009, more than 10 ISTE workshops have been successfully conducted through the distance mode. The unique feature of Sona nodal center is that the live lecture will be made available in a multiple window display with four LCDs. This kind of facility is available in only very few centers.

### Remote Center Code 1157

#### Workshop Coordinator:

Dr. R. Arul Mozhiyal, EEE-Dept.  
Mobile: 9443514485

#### Remote Center Coordinator:

S. David Samuel Azariya,  
Mobile: 9843790325

## TWO-WEEK ISTE WORKSHOP

on

**Analog Electronics**

in

**Sona College of Technology  
Salem, Tamil Nadu**

Under the

**National Mission on Education through ICT  
(MHRD, Govt. of India)**

**4th June- 14th June, 2013**

**Conducted by IIT Kharagpur**



### Coordinators:

Prof. Anindya Sundar Dhar  
Prof. Pradip Mandal  
Prof. Indrajit Chakrabarti  
Prof. Achintya Halder

Dept. of Electronics & Electrical Communication  
Engineering, IIT Kharagpur

### Principal Coordinator

**Prof. Somnath Sengupta**

Dept. of Electronics & Electrical Communication  
Engineering, IIT Kharagpur  
Kharagpur - 721302