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# **One Week ISTE Workshop for Coordinators**

On

**Analog Electronics**

Under the

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

**1 – 5 April, 2013**

**Conducted by IIT Kharagpur**

**Coordinators:**

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## **Introduction to the Workshop**

An important initiative has been taken by IIT Bombay and IIT Kharagpur to work with Engineering Colleges in the country to enhance the teaching skills of our faculty colleagues in core Engineering and Science subjects. This is the second phase of Teach One Thousand Teachers programme run successfully earlier by IIT Bombay under the project called 'Empowerment of Students and Teachers through Synchronous and Asynchronous Instruction,' two-week ISTE workshops are conducted during the vacation periods in summer and winter. Participating teachers attend live lectures given by IIT faculty at a remote center close to their own college, and also attend tutorial and lab sessions conducted in the same centers. The lecture transmission and live interaction takes place in distance mode using the AVIEW technology through internet, at selected remote centers across the country. This initiative is part of the 'National Mission on Education through ICT,' which is supported by MHRD. Faculty coordinators are appointed at each remote centre to handle the technology infrastructure and other operational logistics. Additionally, for each workshop there will be a workshop Faculty Coordinator for that subject, who will help in the conduct of labs and tutorials at each center.

We invite expert faculty from various remote centers to a five-day 'Coordinators' training workshop' which is held in IIT, at least two months 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, 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 at IIT. 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, two-week ISTE workshops were conducted 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 Education Technology.” We have reached more than 30,000 teachers and helped them to enhance their teaching skills at around **230** distinct Remote Centers across the country.

In the backdrop of the success of these workshops, we now announce another two-week ISTE workshop in June 2013 on Analog Electronics. The Coordinators’ workshop will be held in **April 2013**

### **One Week Coordinators’ Workshop**

The proposed Coordinators’ Workshop, to support the above, is being organized at IIT Kharagpur from **1<sup>st</sup> April to 5<sup>th</sup> April 2013**. This workshop will provide a complete orientation to the prospective Workshop Coordinators, on the methodology to be followed in this project. This will include the delivery of live lectures through the AVIEW mechanism of interaction with participants, and the local conduct of tutorials and labs. Since the final contents are meant to be adopted by most colleges across the country, this workshop will finalize the following for the subject of Analog Electronics:

- (a) Definition of common syllabus to be covered.
- (b) Graded coverage from simple to difficult levels for each topic and subtopic.
- (c) Nature of tutorials, keeping the above gradation and the typical examination pattern in mind; but leading to the typical advanced levels reached in such subject teaching at the top institutions of the world.
- (d) Discussion of laboratory environment and the experiments to be conducted.
- (e) Use of the learning management system, audio-visual equipment, editing tools.
- (f) Other logistic details for conducting the main workshop.

Tentative syllabus as followed in IIT Kharagpur for a course on “**Analog Electronics,**” is given below:

- **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.

### **Teaching Faculty**

**Prof. A. S. 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 will be five days. It will start on Monday<sup>1<sup>st</sup></sup> April, 2013 and will end on Friday 5<sup>th</sup> April, 2013.

**Venue:** Kalidas Auditorium, IIT Kharagpur.

## **Who may benefit**

The workshop will benefit faculty colleagues who are willing to be prospective Workshop Coordinators for the larger workshop to be held in June 2011. They should have taught a course on Basic Electronics, and should be familiar with the syllabi and examination pattern of their own college or university. It is preferable that they have some experience in conduct of ISTE, QIP workshops.

It is mandatory that the participant's Institute is well equipped to conduct the workshop through the internet, for a minimum of 30 participants.

It is also mandatory that the participants bring a document from the Heads of their institutes to the effect that the institute is willing to conduct the Main workshop in June 2013.

## **Important Note:**

**It is mandatory that the participant's Institute is well equipped to conduct the workshop through the NKN/ internet for a minimum of 30 participants. For a remote center a primary requirement is provision of one computer per participant, with Windows as the operating system. This is for the laboratory component of the course.**

**It is also mandatory that the participants bring a document from the Heads of their institutes to the effect that the institute is willing to be part of this project.**

## **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 & other support**

Shared Guest House accommodation with standard boarding will be provided free to the participants, depending on availability, from the evening of Sunday 31<sup>st</sup> March, 2013 (arrival) to the morning of Saturday 6<sup>th</sup> April, 2013 (departure).

## **Course Fee**

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

\* Travel fare reimbursement will be made for up to A/C 2-tier or lowest return airfare, as per GOI entitlement.

## **How to Apply**

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

Due to limited seats, registration will be on a first-come-first-served basis. Confirmation of registration will be sent by email. **Enrollment will be strictly online.**

**LAST DATE FOR ONLINE ENROLLMENT:  
22<sup>nd</sup> March, 2013**

### **Address for Communication:**

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