

### Whom will the course benefit:

The course will benefit teachers of electronics subjects such as integrated circuits and also practicing engineers who are interested in electronics system development and manufacturing. Particular emphasis would be on printed circuit board (PCB) manufacturing and assembly, packaging of ICs and electronic products, and miniaturization.

### Course Outline and Objectives:

The course will sensitize the participants to the fundamentals of electronics systems packaging. The course is multidisciplinary in nature. Today's products in electronics industry need to be packaged to current state-of-art if it has to be in the leading edge market. Hence systems packaging is essential which the course will detail.

### Course Contents:

- Electronic systems and needs
- Physical integration of circuits, packages, boards and complete electronic systems
- System applications like computer, automobile, medical and consumer electronics with case studies and packaging levels
- Interposers in IC packages and PCB levels; 2.5D and 3D IC packaging concepts; TSV and UBM in IC packaging
- Fan-in and fan-out concepts in high packaging-efficiency packages
- Electrical design considerations: Power distribution, signal integrity, power delivery in systems
- CAD for Printed Wiring Boards (PWBs) and Design and Manufacturability (DFM)
- PWB Technologies, Single-chip (SCM) and
- Multi-chip modules (MCM), flex-circuits
- Recent trends in manufacturing like microvias, sequential build-up circuits and high-density interconnect structures

- Materials and processes in electronics packaging, joining methods in electronics; lead-free solders
- Surface Mount Technology-design, fabrication and assembly, embedded passive components; thermal design in PWBs, thermo-mechanical reliability, design for reliability, electrical test and green packaging issues
- Lab visit to DESE PCB Lab.

### Course Organization:

The course will consist of lectures, video highlights of some topics, tutorials and lab visit. There will also be Quiz and Test.

### Eligibility:

The course is meant for faculty of AICTE – recognized engineering colleges. Selected teachers will be paid TA at actual subject to the limit of Three tier AC train/bus fare by the shortest route from the place of work to Bengaluru and back. **However, the maximum TA payable is Rs.3000/-.** They will be provided with a daily allowance of Rs.500/- per day (for 5 days only) towards boarding and lodging as per QIP rules, and will be supplied with the course materials. **The lodging charges will be Rs.300/- per day. Local participants will be paid DA @ Rs.150/- per day for 5 days.**

In addition, a few seats are available on payment basis for non-sponsored (self-support) teachers, scientists from R&D organizations, practicing engineers from industry and others interested in this course. **A course fee of Rs.10,000/- will be charged to these participants.** This will entitle them to participate in the course and receive the course material. Single room **accommodation** is available on the Institute campus at the **Hoysala Guest House.** The participants have to request in advance along with the registration form for such accommodation. The lodging charges will be **Rs.1000/- per day**, for self-sponsored college teachers and **Rs.1500/- per day** for other participants, subject to availability of accommodation.

## CENTRE FOR CONTINUING EDUCATION Indian Institute of Science Bengaluru – 560 012

### QIP Short Term Course On

### “Fundamentals of Microelectronics System Packaging”

16 – 20 January, 2017

### Registration Form

(Please mail to reach before 22<sup>nd</sup> December, 2016 )

1. Name.....
2. Age:..... Sex: Male/Female
3. Office  
address .....
4. Landline No. with STD code:.....
5. Mobile No. ....
6. Email ID:.....
7. Academic Qualifications  
Degree subject year University  
Diploma/B.Sc./B.A.....  
B.E/B.Tech/M.Sc. ....  
M.E/M.Tech./M.Phil.....  
Ph.D. Completed/Pursuing/Intend pursuing:.....  
Thesis title/Proposed Research Area:.....
8. Teaching Experience.....(Years)

9. Industry Experience .....(Years)
10. Courses taught/professional responsibilities.....  
 .....  
 .....  
 .....  
 .....
11. Accommodation required Yes / No
12. Self-support candidate : Rs. 10,000/-  
 Demand Draft No.....dated.....

**Please mail the filled-in application form to:**

The Officer-in-Charge,  
 Centre for Continuing Education  
 Indian Institute of Science  
 Bengaluru - 560 012  
 Telephone: 080-23600911, 22932055/2491  
 Email: so@cce.iisc.ernet.in/  
 office@cce.iisc.ernet.in

**To reach on or before: 22<sup>nd</sup> December, 2016**

Intending participants may use the attached application form or a photocopy of the same. Applicants from AICTE recognized colleges are required to submit their applications sponsored by their colleges.

Non-sponsored (self-support) teacher applicants /others should send their application along with a **DD for Rs.10,000/-** drawn in favour of **“Registrar, Indian Institute of Science, Bengaluru - 560012”** payable at Bengaluru.

**Deadlines:**

Receiving completed application: **22<sup>nd</sup> December, 2016**

Intimation of selection: **26<sup>th</sup> December, 2016**

**QIP Short Term Course  
 On  
 “Fundamentals of Microelectronics  
 System Packaging”**

**16 – 20 January, 2017**

**Coordinator**

**G.V.Mahesh  
 Principal Research Scientist  
 Dept. of Electronic Systems Engineering**

**Sponsored by  
 AICTE, NEW DELHI**



**Centre for Continuing Education  
 Indian Institute of Science  
 Bengaluru – 560 012  
 Website: cce.iisc.ernet.in**

I agree to abide by the rules of the QIP courses. If selected, I shall participate in the course for the entire duration.

Date: \_\_\_\_\_  
 Place: \_\_\_\_\_  
 Signature

The applicant Mr/Ms.....  
 .....  
 from our institution will be permitted to attend the QIP Short Term Course on **“Fundamentals of Microelectronics System Packaging”** to be held during **16-20 January, 2017** at the Indian Institute of Science, Bengaluru, if selected. He/she will be granted necessary leave of absence.

Place: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Signature of Head of the Department

Signature and Seal of the Principal of the Institution

**(Photocopy of this form may also be used)**