Whom will the course benefit:

Persons interested to learn digital signal processing techniques with applications to speech and image processing

Course Objectives:

To provide an overview of topics in basic and advanced digital signal processing techniques with applications to speech and image processing

Course Contents:

- Introduction to discrete linear systems linearity, linear convolution, cyclic convolution, stability
- Sampling theory, system functions, z-transforms, A/D and D/A conversion, Discrete-Time Fourier Transform and Linear Time Invariant Systems, Discrete Fourier Transform, relationship of DFT to DTFT, fast computation of DFT
- Digital filter design-Finite impulse response (FIR) filters, Infinite impulse response(IIR) Filters, Structures and properties of FIR and IIR filters and review
- Multirate Digital Signal Processing
  a) Interpolation and Decimation
     i. Frequency Interpretation
     ii. Implementation using Polyphase Structures
     iii. Multistate Implementation
  b) Multirate Filter Banks
     i. Uniform Filter Banks
     ii. Quadrature Mirror Filter Banks
     iii. Digital Wavelet Transform
- Linear algebra and orthogonal transforms, and cover DCT, DST, and rectangular transforms, non-orthogonal Gabor transform
- Applications of DSP in speech processing, Introduction to CDF, PDF for a random variable, expectation, uniform and Gaussian distribution, Linear prediction, homomorphic filtering
- Applications of optimization in image processing-Basics of Convex optimization, L1 minimization and sparsity-driven algorithms, Convex models and algorithms for image restoration

Course Organization:

The course will consist of lectures by IISc faculty.

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

“Digital Signal Processing And Applications ”

27th February-3rd March, 2017

Registration Form

(Please mail to reach before 20 January, 2017)

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:...........................................
   …………………………………………………………………...
   …………………………………………………………………...
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: 20th January, 2017

Intending participants may use the attached application form or a xerox copy 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: 20th January, 2017

Intimation of selection: 26th January, 2017