Whom will the course benefit?
Engineering college teachers handling subjects such as physics, mathematical methods, material science, electromagnetism and semiconductor devices.

Course Objective:
To strengthen the understanding of mathematical methods applied to solid state physics to enable better teaching and research activities in related domains.

Course Contents:
- **Vector space**: Hilbert space, inner product, ortho-gonalization
- **Vector calculus**: Vector integration, differentiation, Conversion between volume, surface and line integrations of vector and scalar (Gauss theory, Strokes law and Gree’s theorem
- **Matrix**: Definitions, operations, eigen value problem
- **Tensor**: Basic and invariance of tensor
- **Complex number**: Complex variable, multivalued function, analytic function, Complex differentiation and integration
- **Ordinary and Partial Differential equation solution**
- **Special functions**: Gamma, Beta, Zeta, Airy, Error functions
- **Drude Model**
- **Sommerfeld model**
- **Lattice, reciprocal lattice, Brillioun zone, X-ray diffraction, structure factor, periodic potential, Empty Lattice Approximation**
- **Fermi surface, De-Haas-Van Alphen Effect, Bloch Oscillations, Phonon, Debye Approximation, Magnetization**

Faculty:
Dr. Anindya Das and Dr. Tanmoy Das, Dept. of Physics, IISc. will deliver the lectures and handle the hands-on sessions.

Eligibility:
The course is meant for faculty of engineering colleges recognized by All India Council for Technical Education (AICTE), National Institutes of Technology (NIT’s) and National Institute of Technical Teachers’ Training & Research (NITTTRs). 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/- (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 for non-sponsored (self-support) teachers, scientists from research labs, practicing engineers from industries and other interested persons on payment basis as under.

Course Fee:
- **Academic Institutes, Govt. R&D Labs**: 10,000 INR
- **Private Industries**: 15,000 INR

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 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-support college teachers, and **Rs.1500/- per day** for Industry participants, subject to availability of accommodation.

Course Fee:
- **Academic Institutes, Govt. R&D Labs**: 10,000 INR
- **Private Industries**: 15,000 INR

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 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-support college teachers, and **Rs.1500/- per day** for Industry participants, subject to availability of accommodation.
11. Course taught/professional responsibilities……………………
……………………………………………………………………
……………………………………………………………………
……………………………………………………………………
……………………………………………………………………

12. Accommodation required     Yes / No

13. Self-support candidate :

   Academic Institutes, Govt. R&D Labs:  Rs. 10,000
   Private Industries               :  Rs. 15,000

Demand Draft No.……………………… dated…………

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 “Mathematical Methods and Solid State Physics” to be held during 24-28 July 2017 at the Indian Institute of Science, Bengaluru, if selected. He/she will be granted necessary leave of absence.

It is certified that our college is recognized by AICTE Order No:………………………Date:……………..

Date: Place:

Signature of Head of the Department

Signature and Seal of the Principal of the Institution

Please provide Phone number of

Principal: ………………………………..

HOD: ………………………………………

Intending participants may use the attached application form or a xerox copy of the same. Applicants from AICTE recognized colleges, NIT’s and NITTTRs are required to submit their applications sponsored by their colleges.

Non-sponsored (self-support) teacher applicants should send their application along with a DD for the course fee drawn in favor of “Registrar, Indian Institute of Science, Bengaluru -560012” payable at Bengaluru. The course fee will be Rs. 10,000 for participants from academic institutions and government research labs, and Rs. 15,000 for participants from other organizations.

**Deadlines:**

Receiving completed applications: 4th July 2017

Intimation of selection: 7th July 2017

Please mail the filled-in application form to

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

To reach on or before: 4th July 2017

(Xerox copy of this form may also be used)