



**QIP Short Term Course (STC) and  
Continuing Education Programme (CEP)  
on  
Steel Technologies  
(Date: 02-09 March, 2017)**



**Organised by  
Department of Metallurgical Engineering  
Indian Institute of Technology (Banaras Hindu University)  
Varanasi-221005**

**OBJECTIVE AND SCOPE**

This course is designed to provide detailed and contemporary knowledge of production of steels through various technologies, current challenges in the steel industry and help the participants in understanding the importance of steel making. The course will reveal insights of melting technologies used for producing quality steels and importance of composition and processing on the microstructure and properties of steels. The lectures will depict fundamentals of microstructural developments by different heat treatment processes which are necessary for structure-property correlations.

The areas covered under the program are making, shaping, processing, treating, characterization and possible applications of steels and recent developments in the area. The broad areas are Primary Steel Making, Secondary Steel Making, Vacuum Steel Making, Special Steel Melting, Processing Technologies, Sheet Metal Forming, Thermomechanical Processing, Microstructure and Metallography, Phase Diagrams, Diffusional Phase Transformations, Bainitic Transformation, Martensitic Transformation, Tempering, Isothermal Transformation Diagram, Continuous Cooling Transformation Diagram, Classification and their Strengthening Processes, Hardenability, Carburising, Nitriding and Special Case Hardening Techniques, Flame Hardening, Induction Hardening, Laser Hardening, Electron Beam Hardening, Steels for Automobile Applications and Power Sectors, Strategic Applications, Electrical Grade Steels – CRNO, CRGO and Amorphous Steels, Corrosion Behavior of Steels, Steel Foams, Special Welding Processes, Mechanical Testing of Materials, Fracture and Fractography and a few Laboratory Practices on Iron and Steels.

**Coordinator  
QIP STC and CEP  
Dr. R. Manna  
Department of Metallurgical Engineering  
Indian Institute of Technology (Banaras Hindu University), Varanasi-221005  
Email: [rmanna.met@iitbhu.ac.in](mailto:rmanna.met@iitbhu.ac.in)  
Ph: 09452156176**

## **IMPORTANT DATES**

Last date for receiving applications: February 21, 2017

Intimation to the applicants: February 27, 2017.

## **ENQUIRES SHOULD BE ADDRESSED TO**

Dr. R. Manna

Associate Professor

Department of Metallurgical Engineering,

Indian Institute of Technology (Banaras Hindu University),

Varanasi – 221 005

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Mobile: 91-9452156176

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## **CATEGORY I: REGISTRATION FOR QIP SPONSORED**

**Teachers from AICTE approved Institutions:** Participants should bring a letter of nomination from their head of institution stating that they are being deputed for the course.

**There is no registration/ accommodation fee.** However, a Demand Draft of Rs. 2,000/- (drawn in favor of “**Registrar, IIT(BHU), Varanasi**”) should be enclosed with the application form which will be refunded to the participants attending the course. Total reserved seats for QIP candidates is 30 which will be awarded on first-cum-first served basis. The refund amount will not be returned to those who will be absent.

## **CATEGORY II: REGISTRATION FOR OTHERS (CEP)**

1. Scientists / Technologists / Engineers from industry or government institutions: should apply by 13 February, 2017, course fee: 20,000/-. (Course fee is Rs. 25,000 per person after 13 February, 2017).
2. Faculties from University and Engineering Colleges: should apply by February 21, 2017, course fee: 15,000/-. Course fee is Rs. 17,000 per person after February 21, 2017).

Candidates will be provided course materials, working lunches, tea and snacks during the course hours. Registration fees, boarding and lodging expenses will be waived for QIP sponsored candidates. To-and-fro travel cost (up to A/C 3-tier rail fare only) by the shortest route between the place of work and the venue of the course will be reimbursed for Category –I. It should be borne by the participants of **other category**.

The registration fees in Demand Draft should be in favor of ‘**Registrar, IIT (BHU), Varanasi**’ payable at Varanasi along with completed registration form to be sent to Dr. R. Manna, Associate Professor, Department of Metallurgical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi-221005 (U.P.), INDIA. Also, send the scanned copy of the registration form and draft through email of the Coordinator (rmanna.met@iitbhu.ac.in) and cc to Coordinator QIP (**coordinator.qip@itbhu.ac.in**).

## **CERTIFICATE**

A certificate of participation would be issued to all the participants.

## **COURSE FACULTY**

Faculty members/experts from premier institutions.

## **WHO SHOULD ATTEND**

Faculty members of Institutions, Engineering Colleges and Universities, working professionals in the area of Iron and Steel Making processes, developing or characterizing steel/special steel products/professionals/ managers/Engineers, administrators in the iron and steel making technologies.

## **LOCATION**

Varanasi is well connected to almost all parts of the India by railways. Also it is well connected via Air to Delhi, Mumbai, Kolkata, Hyderabad, and Bengaluru. There are frequent flight services from New Delhi. The Institute is located in the extreme south of the Varanasi city and about 7 km away from Varanasi Cantt Railway Station and 30 km from the Babatpur (Varanasi) airport. Taxis, Auto-rickshaws, are available as transport.

## **ACCOMMODATION**

Limited shared accommodations in the guest house is available for Faculty members of AICTE approved Institutions, Engineering Colleges. Others have to make their own arrangements. Accommodation may be arranged for Category II subject to availability of rooms at GTAC.

## **TITLES OF LECTURES**

Primary Steel Making, Secondary Steel Making, Vacuum Steel Making, Special Steel Melting, Processing Technologies of Steels-(Ingot, CC And CSP), Sheet Metal Forming into Near-Net Shape Components, Thermomechanical Processing of Steels, Fundamentals of Microstructure and Metallography, Phase Diagrams of Steels, Diffusional Phase Transformations in Steels, Bainitic Transformation in Steels, Martensitic Transformation in Steels, Tempering of Steels, Isothermal Transformation Diagrams, Heat Treatments Based on Isothermal Transformations, Continuous Cooling Transformation Diagrams, Heat Treatment Processes based on Continuous Cooling Transformations, Steels-Classification and their Strengthening Processes, Basics of Hardenability-Grossman Method, Hardenability Tests-Grange- Hot Brine Test, Jominy-End- Quench Test, Timken's Air Hardenability Test, Case Hardening I: Carburising, Case Hardening II: Nitriding and Special Case Hardening Techniques, Surface Hardening: Flame Hardening, Induction Hardening, Laser Hardening, Electron Beam Hardening, Steels for Automobile Applications and Power Sectors, Steels for Strategic Applications-(Aerospace, Defence And Nuclear Programs), Electrical Grade Steels –CRNO, CRGO and Amorphous Steels, Corrosion Behavior of Steels, Steel Foams, Special Welding Processes, Mechanical Testing of Materials, Fracture and Fractography, Metallography and Heat Treatment Laboratory, X-Ray and Electron Metallography Laboratory, Mechanical Testing Laboratory, Ferrous Processing Laboratory.

## **SPEAKERS:**

Prof. S. N. Ojha, Prof. G. V. S. Sastry, Prof. R. K. Mandal, Prof. Vakil Singh, Prof. N. K. Mukhopadhyay, Prof. N. C. Santhi Srinivas. Prof. B. N. Sarma, Dr. O. P. Sinha, Dr. C. K. Behera, Dr. R. Manna, Dr. G. S. Mahobia, Dr. K. Chattopadhyay, Dr. J. Basu, Dr. N. K. Prasad, Dr. J. K. Singh

**QIP SHORT TERM COURSE ON “STEEL TECHNOLOGIES”, MARCH 02-09, 2017**

**REGISTRATION FORM**

- 1. Name (block letter): .....
- 2. Designation & pay scale: .....
- 3. Organization: .....
- 4. Address for communication: .....

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Pin code: .....  
Ph. No.: ..... Fax No.: .....  
E-mail: .....

- 5. Highest Academic Qualification: .....
- 6. Specialization: .....
- 7. Experience (in years):
  - (a) Teaching: .....
  - (b) Industrial: .....

8. Amount of TA required as per entitlement mentioned in the brochure (only for AICTE approved college teachers):  
Please register me for the course on “**Steel Technologies**” to be held at IIT (BHU) Varanasi.  
Place: .....  
Date: .....

Signature of the applicant

**SPONSORSHIP**

Prof./Dr./Mr./Ms./Mrs./\_\_\_\_\_ is an employee of our institute and his/her application is hereby sponsored. The applicant will be permitted to attend the short-term course “**Steel Technologies**” at IIT (BHU) Varanasi during the date of STC, if selected.

Date: ..... Signature of Sponsoring Authority  
Designation:  
Official Seal:

**FOR APPLICANTS FROM INDUSTRIES AND GOVERNMENT DEPARTMENTS:**

DD No. : ..... Date: .....  
Bank: .....  
Amount: .....

Signature of the Applicant