AICTE/QIP SPONSORED SHORT TERM COURSE

ON

VACUUM TECHNOLOGY AND PROCESS APPLICATIONS

(DECEMBER 1 - 14, 2018)

At

Indian Institute of Technology, Kharagpur
Kharagpur, India – 721302

Organized by

Cryogenic Engineering Centre
Indian Institute of Technology Kharagpur
Kharagpur, India – 721302

Coordinator: Prof. V. Vasudeva Rao

Co-coordinator: Dr. Abhay Singh Gour

Email Id: vacuum.2018.iitkgp@gmail.com
Phone (office): +91 - 3222 – 283590

About the Institute

Indian Institute of Technology Kharagpur was established by the government of India in 1951. Being first of its kind, it is recognized as an Institute of National Importance by the government of India. The institute was established to train scientists and engineers after independence. It shares its organizational structure and undergraduate admission process with other IITs. IIT Kharagpur has the largest campus (2,100 acres), several departments, and the highest student enrolment.

About the Centre

Cryogenic Engineering Centre is the only Centre in India that is engaged in R & D activities in Cryogenic Engineering, Vacuum Technology and Applied Superconductivity.
The Centre, since its inception in 1976, has been actively engaged in training engineers from industries, academic institutions and scientists from R & D organizations through continuing education program by conducting short term courses and workshops in specialized areas at regular intervals. The Centre also offers M.Tech./M.S/PhD programmes in Cryogenic Engineering. The ongoing research activities include Cryogenic process systems, Air separation, Applied Superconductivity for power applications, Cold electronics, Vacuum Technology and Cryophysics.

The Centre has established a sophisticated vacuum technology laboratory under Indo-German collaboration for training teachers/ Industry – personal in vacuum technology and process applications.

Course Overview

Vacuum Technology has diverse applications in various areas of science and Engineering. These include major fields like Electronics, Metallurgy/ Chemical Processing, Food Processing, Space-Simulation, Nuclear Engineering, Electrical Engineering and Cryogenic engineering. This has resulted in rapid development of many sophisticated vacuum instruments, pushing the range of vacuum to 10^{-12} Torr. To keep pace with this

advancement in vacuum technology, it is absolutely necessary for the engineers/scientists/teachers of our country to get a first-hand exposure to the modern vacuum equipments and their applications.

The training method consists of lecture sessions, laboratory experiments and discussions on process vacuum systems for various applications.

Course contents:

- Introduction to basic concepts of vacuum.
- Application of vacuum in different processes (Metallurgical, electronic, chemical, electrical, space, nuclear, pharmaceutical, food and cryogenics).
- Production of medium and high vacuum by Rotary, Piston, Roots, Diffusion, steam jet ejectors, Water-ring, Dry membrane, Sorption, screw, claw and scroll pumps- their pumping characteristics.
- Ultra-high vacuum pumps and their pumping characteristics, Handling and maintenance of Turbo-molecular, Ion and Cryo-pumps.
- Pressure measurement in vacuum systems using different primary and secondary gauges. Calibration/ maintenance of vacuum gauges.
- Residual gas analysis in vacuum systems.
- Design and Fabrication of vacuum chambers, flanges, couplings, and components for different applications.
- Gas flow in vacuum systems, conductance calculations and measurements on vacuum piping networks. Design of vacuum piping in process industries**.**
- Leak detection / trouble shooting / maintenance of vacuum systems, handling of mass spectrometric leak detectors, degassing procedures.
- Laboratory sessions related to the above topics.
- Visits to vacuum related laboratories in the other departments.

Resource Persons: Faculty members from IIT Kharagpur and experts from other Institutes / Industries in India.

Eligibility:

Category A: Faculty members of AICTE-QIP approved Engineering colleges/ Institutes/ Universities with M.Sc./PhD in Physics/ Chemistry / and B.Tech/ M.Tech/ PhD in Aerospace/ Mechanical/ Chemical/ Pharmacy/ Metallurgical/ Electrical/ Electronics/ Instrumentation/ Nuclear/ Food Processing Engineering.

The course is free for Category A and the number of participants in Category A is limited to thirty.

Category B: Personnel Sponsored by the Industry/ R & D labs / other organizations with above mentioned academic background.

The course fee for Sponsored Candidates from industry, R & D labs (Category B) is Rs. 25,000/-. Registration fee includes electronic copy of study materials and refreshments during sessions.

Certificate will be issued to all the registered participants on attending the complete course.

Accommodation

The Category A participants will be provided twin sharing rooms in the SAM Guest House. TA as per the rule will be paid to Category A only. Accommodation on payment basis for Category B can be arranged in various guest houses subject to availability.

The campus has several multi-cuisine restaurants where you can have breakfast/ lunch / dinner.

Important Dates

Last date for receipt of application: ~~October 31, 2018~~ November 20, 2018

Start of Course: December 1, 2018
End of Course: December 14, 2018

How to Apply

To apply online use the link:
https://erp.iitkgp.ernet.in/CEP/courses.htm