

COURSE BROCHURE

GLOBAL INITIATIVE OF ACADEMIC NETWORKS



International Summer Term Course - 2016

on

Industrial Catalytic Technology

(July 11-15, 2016)

Course Coordinators

Dr M K Jha, Dr Sangeeta Garg and Dr Poonam Gera



Organised by Department of Chemical Engineering

Dr B R Ambedkar National Institute of Technology

Jalandhar – 144 011 (Punjab) India

INDUSTRIAL CATALYTIC TECHNOLOGY

About GIAN

Union Cabinet has approved a programme titled Global Initiative for Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of Scientists and Entrepreneurs Internationally to encourage their engagement with the Institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reforms, and elevate India's Scientific and Technological capacity to global excellence. GIAN is envisaged to catalyse higher Education Institutions in the country, and that will initially include all IITs, IIMs, Central Universities, IISc Bangalore, IISERs, NITs and IIITs, also subsequently cover good State Universities where the spinoff is vast. GIAN is an evolving scheme which will initially include participation of foreign faculty in Institutes as Distinguished / Adjunct / Visiting faculty / Professors of Practice. They will be delivering their expertise in Short or Semester-long Courses. In addition to Short/Long Term Courses other activities will also be included in due course of time.

GIAN IS ENVISAGED TO ACHIEVE THE FOLLOWING OBJECTIVES:

1. To increase the footfalls of reputed International faculty in the Indian Academic Institutes.
2. To provide opportunity to our faculty to learn, share knowledge and teaching skills in cutting edge areas.
3. To provide opportunity to our students to seek knowledge and experience from reputed International faculty.
4. To create avenue for possible collaborative research with the International faculty
5. To increase participation and presence of International students in the academic Institutes.
6. To provide opportunity for the students of different Institutes/Universities to interact and learn subjects in niche areas through collaborative learning process.
7. To provide opportunity for the technical persons from Indian Industry to improve their understanding and update their knowledge in relevant areas.
8. To develop high quality course material in niche areas, both through video and print media that can be used by a larger body of students and teachers.
9. To document and develop new pedagogic methods in emerging topics of National and International interest.

About NIT Jalandhar

Dr B R Ambedkar National Institute of Technology was established in the year 1987 as Regional Engineering College and was given the status of National Institute of Technology (Deemed University) by the Government of India on October 17, 2002 under the aegis of Ministry of Human Resource Development, New Delhi. Now the Ministry of Human Resource Development, Government of India has declared the Institute as "Institute of National Importance" under the act of Parliament-2007. A large number of reputed Industrial houses in the country visit the Institute and select the final year students as Engineers/ Management Trainees and the Science Students.

As one of the National Institutes of Technology (NIT), the Institute has the responsibility of providing high quality education in Engineering, Technology and Sciences to produce competent Technical and Scientific manpower for the country. The Institute offers B Tech, M Tech, M Sc, MBA and Ph D programmes in the several disciplines of Engineering, Sciences & Technology as well as Humanities & Management.

Vision

To build a rich intellectual potential embedded with interdisciplinary knowledge, human values and professional ethics among the youth, aspirant of becoming Engineers and Technologists, so that they contribute to society and create a niche for a successful career.

Mission

To become a leading and unique Institution of higher learning, offering State-of-the-Art Education, Research and Training in Engineering and Technology to students who are able and eager to become change agents for the industrial and economic progress of the Nation. To nurture and sustain an academic ambience conducive to the development and growth of committed professionals for sustainable development of the Nation and to accomplish its integration into the global economy.

Quality Policy

- ❖ To develop technical human resource of excellence suitable for global requirements.
- ❖ To ensure good quality academic and industrial research programmes in different areas of Engineering and Technology.
- ❖ To generate Industry-Institute synergy for shaping technical education to meet the requirement of industry.

About the Department

The Department of Chemical Engineering, NIT Jalandhar is one of the sixteen Departments of the Institute. The coherent, cohesive and homely environment of the Department is attributed to the students, faculty and staff with tremendous potential and opportunities to grow academically, emotionally and spiritually. The Department started functioning in 1990 for teaching undergraduate B.Tech programme and subsequently M.Tech and PhD Programs were initiated. Department is striving to emerge as a premier Centre of Chemical Engineering teaching and research of the country. The Department has also been selected as 'DST-FIST' sponsored Department.

About the Programme

Catalysts are sine aqa non of petroleum, petrochemical, chemical and environmental processes. The products manufactured using catalysts constitute about 80-90% of the total products produced. It is also recognized that the GDP growth of the country and catalyst consumption runs parallel to each other, emphasizing the importance of catalysis in accruing societal benefits.

Catalysis is an interdisciplinary science. Principles of chemical engineering chemistry, material science, and nano materials, surface science, are adroitly applied for further enhancement of knowledge in this area. Clear understanding is critically needed in assessing the role played by preparation, characterization, deactivation and poisoning of the catalysts in a process. The knowledge of structure activity correlations and their role in understanding the functions of the catalyst and catalytic process development for efficient and green novel catalytic processes is needed. This knowledge is critical for economic growth and sustainable living. The course is designed to target towards achieving these goals by inter disciplinary approach culling the knowledge in diverse disciplines and developing a theme in understanding the journey of the catalyst from cradle to grave.

Objectives of the Programme

The following are the broad objectives of this course:

1. To explain the role of catalysis in enhancing the societal benefits
2. Demonstrate the significance of catalysis in industrial practice
3. To provide exposure to the participants regarding fundamental and applied aspects of industrial catalysis
4. To disseminate advances in fundamental catalysis and show how they are useful in new catalytic process development and catalyst design
5. To provide exposure about sophisticated catalyst characterization techniques how they can be used to characterize fouling, deactivation, and poisoning of the catalysts used in industry

Coverage

- ❖ Introduction to Industrial Catalysis
- ❖ Fundamental principles of heterogeneous catalysis
- ❖ Principles of heterogeneous catalysis
- ❖ Physiochemical and Spectroscopic characterization of catalysts
- ❖ Green principles in production
- ❖ Environmental friendly catalysts and water treatment
- ❖ Role of catalysis in value added conversions
- ❖ Role of catalysis in petroleum refining: Catalytic Reforming, Alkylation, Isomerization
- ❖ Catalysis in inorganic chemical and fine chemical synthesis including drug synthesis
- ❖ Catalysis in auto exhaust conversion and environmental processes

Fee Details

Fees	The participation fee for taking the course would be:	
	Students:	Rs. 1000/-
	Academic Institutions:	Rs. 2000/-
	Industry/Research:	Rs. 2500/-
	Participants from abroad:	US \$100/-
	The above fee includes the instructional materials, internet facility and snacks between the sessions. The accommodation will be provided on payment basis subject to availability on request otherwise participants will have to make their own stay arrangement.	

Eligibility

- ❖ Petroleum refining and petrochemical technologists
- ❖ Chemistry and chemical engineering scientists
- ❖ Material scientists
- ❖ Students and faculty of academic institutions
- ❖ Technical personnel in chemical Industry and national laboratories

Reaching to NITJ

It is situated at a distance of 146 km from its capital Chandigarh and is at a distance of 350 Km from New Delhi on Delhi-Amritsar National Highway. Nearest Airports in the vicinity are at Amritsar and Chandigarh. The Shatabdi Express trains plying from New Delhi in the morning at 07.20 hrs and in the evening at 16.30 hrs, are the best modes of travel to Jalandhar from Delhi. Train takes about 5 hours to reach Jalandhar City.

Registration Process

Step 1: One Time Registration

Registration for GIAN courses is not free because of constraint in the maximum number of participants allowed to register for a course. In order to register for any course under GIAN, candidate will have to get registered one time first to GIAN Portal of IIT Kharagpur using the following steps:

1. Create login and password at <http://www.gian.iitkgp.ac.in/GREGN/index>
2. Login and complete the Registration Form.
3. Select Courses
4. Confirm your application and payment information.
5. Pay Rs. **500/- (non-refundable)** through online payment gateway.
6. **Download and print “pdf file”** of your enrolment application form for your personal records and copy of the same to be sent to the Course Coordinator.

Step 2: Institute Registration

1. Institute registration process is an offline process. Interested candidates are requested to download the Registration Form (docx/pdf)

2. Course Fee (Non-refundable):

- Students/Research Scholars: Rs. 1000/-
- Faculty/Staff of Academic Institutions: Rs. 2,000/-
- Industry/Research Personnel: Rs. 2,500/-
- Participants from abroad: US \$100/-

3. The Registration fee has to be paid via **Demand Draft/ NEFT**, in favour of “**GIAN: Industrial Catalytic Technology**” payable at **Jalandhar**.

4. Scan copy of the filled in “**Registration Form**” along with scan copy of “**Demand Draft/ Receipt of NEFT**” and **Application Form generated in Step 1** must be sent via **E-mail to the Course Coordinator** of the programme jhamk@nitj.ac.in , or gargs@nitj.ac.in , on or before **June 27, 2016**.

How to Apply

1. Registration Form should accompany **demand draft(s)** of respective **registration fees (non-refundable) and/or accommodation fees (non-refundable)** as applicable, which should be drawn in favour of “**GIAN:Industrial Catalytic Technology**” payable at **Jalandhar**. Payment can also be done through **National Electronic Funds Transfer (NEFT)** to the account of “**GIAN:Industrial Catalytic Technology**” (**Account No: 65249454823**), **State Bank of Patiala, IFSC Code: STBP0000841**.

2. **Scanned copy** of duly filled up Registration Form, and the **demand draft/NEFT** must be **E-mailed** to the coordinator at jhamk@nitj.ac.in , or gargs@nitj.ac.in , on or before June 27, 2016.

3. **Hard copy** of the Form and draft must also be sent by Speed post/Registered post to

Dr M K Jha,
Professor and Course Coordinator,
Department of Chemical Engineering,
Dr. B.R. Ambedkar National Institute of Technology,
Jalandhar-144 011, Punjab

on or before July 4, 2016 by 5 PM.

4. **Selection will be made purely on First Come First Serve Basis and Eligibility.** (Subject to fulfilling of the seats available).



5. **Maximum fifty (50) participants** will be accommodated in the course.

6. The Brochure and the Registration Form may be downloaded from the Institute website **www.nitj.ac.in**.


Important Information

- The students will obtain **academic credits for this course** based on the evaluation and grading process. The host Institute will only provide information on the grading system, subject syllabus, and the academic policy. The home/sponsoring University/Institute of the student will be mainly responsible for transferring academic credits.
 - As per the host Institute and instruction from GIAN, the course consisting of 30 lectures is of TWO credits. This credit can be included in the student's marks for seminar/presentation/college tour or any other suitable subject as per the participating Institute/ College rules and regulation.
 - Participants will be provided registration kit & course material covering the entire course.
 - After successful completion of the course, all participants will get participation certificates along with grades and credits as per Institute norms.
 - **No TA, DA will be provided to the participants.**
 - Limited accommodation is available in the Institute campus which will be provided on First Come and First Serve Basis on payment mode.
 - Additional Fees for accommodation (if required):
 - ✚ Rs 250/day for Students
 - ✚ Rs 500/day for Faculty (Guest House-Twin sharing Basis)
- *Food on actual basis
- **List of selected participants** will be available on Institute website **on June 28, 2016.**

The Faculty

	<p>Professor Sreekantha Jonnalagadda Senior Professor Chemistry Department, University of KwaZulu-Natal Westville Campus, Westville, Durban South Africa E-mail: jonnalagaddas@ukzn.ac.za</p>
	<p>Professor Murali Dhar Gudimella (Former Scientist G, Director Grade scientist, Head, Catalytic Conversion Processes Division, Indian Institute of Petroleum, Dehradun) Senior Professor Department of Chemical Engineering Gayatri Vidya Parisad College of Engineering, Madhurawada, Visakhapatnam, Andhra Pradesh 530048 Email: dhargm@gmail.com</p>

For more details, contact the following persons:

	<p>Dr M. K. Jha Professor Department of Chemical Engg. Dr B R Ambedkar NIT Jalandhar Email :- jhamk@nitj.ac.in Phone: +919417290668</p>
	<p>Dr Sangeeta Garg Associate Professor Department of Chemical Engineering Dr B R Ambedkar NIT Jalandhar Email: gargs@nitj.ac.in Phone : +91 98728-26903</p>
	<p>Dr Poonam Gera Associate Professor Department of Chemical Engg. Dr B R Ambedkar NIT Jalandhar Email: - chadhap@nitj.ac.in Phone: +919855098226</p>

Web Links:-

www.nitj.ac.in

www.gian.iitkgp.ac.in

Organised by:-

Department of Chemical Engineering

(DST-FIST sponsored Department)

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