

INTERNATIONAL COURSE

Under

GLOBAL INITIATIVE OF ACADEMIC NETWORKS (GIAN)

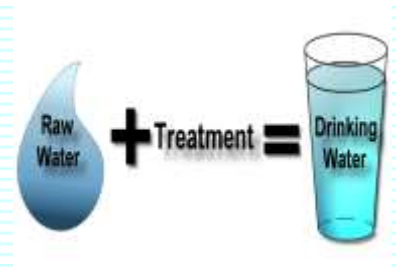
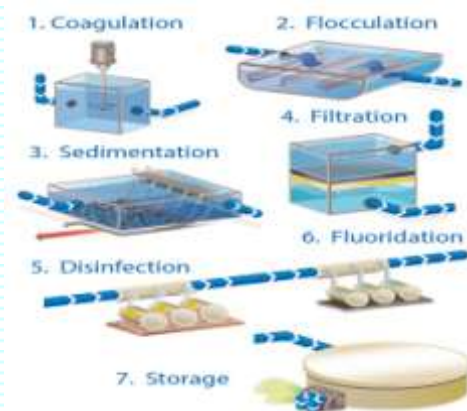


PHYSICAL-CHEMICAL PROCESSES FOR WATER AND WASTEWATER TREATMENT

AUGUST 21-26, 2017

Course Coordinators

Dr. V. Subbaramaiah, Dr. U. K. Arun Kumar, Dr. K. Venkataratnam Kamma



DEPARTMENT OF CHEMICAL ENGINEERING
MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY
J.L.N. Marg, Jaipur-302017, Rajasthan, India

GIAN (An Initiative of Government of India)

Union Cabinet has approved a program titled Global Initiative of 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 reform, and elevate India's scientific and technological capacity to global excellence. GIAN is envisaged to catalyze higher education institutions in the country that will initially include all IITs, IIMs, Central Universities, IISc Bangalore, IISERs, NITs and IITs. Subsequently, good State Universities where the spinoff is vast, shall also be covered. GIAN is an evolving scheme which will initially include participation of foreign faculty in Institute as Distinguished/ Adjunct/ Visiting faculty/ Professor of practice. They will delivering their expertise in short or semester-long course. In addition, other activities shall also be included in due course of time.

GIAN is envisaged to achieve the following objectives:

- a) Provide opportunity to our faculty to learn and share knowledge and teaching skills in cutting edge areas.
- b) To provide opportunity to our students to seek knowledge and experience from reputed International faculty.
- c) To create avenue for possible collaborative research with the international faculty.
- d) To increase participation and presence of international students in the academic Institutes.
- e) Opportunity for the students of different Institutes/Universities to interact and learn subjects in niche areas through collaborative learning process.
- f) Provide opportunity for the technical persons from Indian Industry to improve understandings and update their knowledge in relevant areas.
- g) To motivate the best International experts in the world to work on problems related to India.

About The Course

Physical and chemical processes have been widely used for water and wastewater treatment. The principles of physical and chemical treatment processes are very important and critical in design, engineering practice and problem solving. However, the topics related to physical and chemical treatment processes are traditionally taught by linking them with either drinking water or wastewater treatment, and material covered are often either too simple or too complicated. Therefore, it is often difficult for students to gain a comprehensive picture of the related principles.

This course will introduce key concepts and major topics of physical and chemical treatment processes, including reaction kinetics, mass balance, reactor fundamentals, water and wastewater quantities and quality, process flow sheets, preliminary treatment unit operations, coagulation/flocculation, separation technologies (e.g., sedimentation, filtration, membrane processes), sorption/ion exchanger, mass transfer, oxidation/reduction, and photolysis/ photocatalysis processes. Design of physical and chemical treatment processes along with case studies.

Objectives

The primary objectives of the course are as follows:

- ✚ Providing a sound understanding of the fundamentals of major physical/chemical treatment processes (e.g., reactors, reactions, mass transfer, sorption, membrane processes).
- ✚ Enhancing the course attendees' capability to identify critical issues related to physical and chemical treatment processes in environmental engineering.
- ✚ Developing the attendees' ability to design some physical and chemical treatment processes/systems associated with drinking water and wastewater treatment facilities.

Who Can Attend

- Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.
- Students at all levels (B.Tech/MSc/M.Tech/PhD).
- Faculty from reputed academic institutions and technical institutions.

Modules Coverage

Day	Topics to be covered
Day 1	Lecture 1: Introduction to water and wastewater treatment. Lecture 2: Water and wastewater quantities and quality. Lecture 3: Surface and ground water quality issues in India. Lecture 4: Reaction kinetics. Lecture 5: Mass balance and ideal reactors.
Day 2	Lecture 6: Mass balance and ideal reactors (2). Lecture 7: Unit operations used in water treatment process at India. Tutorial 1: Problem solving session with examples. Lecture 8: Treatment trains and preliminary treatment unit operations. Lecture 9: Rapid mixing, coagulation and flocculation systems (1).
Day 3	Lecture 10: Rapid mixing, coagulation and flocculation systems (2). Lecture 11: Sedimentation systems (1). Lecture 12: Case Study: pharmaceutical wastewater treatment process. Lecture 13: Filtration systems (1). Tutorial 2: Problem solving session with examples.
Day 4	Lecture 14: Filtration systems (2). Lecture 15: Disinfection. Lecture 16: Remediation technology for non-biodegradable wastewater. Lecture 17: Sorption and ion exchange (1). Tutorial 3: Problem solving session with examples.
Day 5	Lecture 18: Sorption and ion exchange (2).

	Lecture 19: Sorption and ion exchange (3). Tutorial 4: Problem solving session with examples. Lecture 20: Mass transfer (1). Lecture 21: Mass transfer (2).
Day 6	Lecture 22: Membrane technology (1). Lecture 23: Mass transfer (3). Lecture 24: Membrane technology (2). Tutorial 5: Problem solving session with examples. Lecture 25: Oxidation/reduction and photolysis/photocatalysis processes (1). Lecture 26: Oxidation/reduction and photolysis/photocatalysis processes (2).
Day 7	Interaction Section & Examination.

Important Dates

Registration Opens: June 15, 2017

Registration Closes: August 18, 2017

Accommodation Requests: Before August 15, 2017

Venue: Malaviya National Institute of Technology Jaipur

About The Host Institute

The Institute was established in 1963 with the name as Malaviya Regional Engineering College, Jaipur. The campus spreads over 317 acres of lush green area in the central location of Jaipur city and is imaginatively laid-out with a picturesque landscape. On June 26, 2002 the college has given the status of National Institute of Technology by the Government of India under the aegis of Ministry of Human Resource Development, New Delhi and on 15th August, 2007 proclaimed 'Institute of National Importance' through act of Parliament-2007. The Institute is fully funded by Ministry of Human Resource Development (MHRD), Government of India. 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 Scientists. Malaviya National Institute of Technology is one of the premier NITs of India and has the responsibility of providing high quality education in engineering, technology and sciences to produce competent Technical and Scientific manpower. The Institute offers undergraduate and post graduate (B.Tech., B.Arch., M.Tech., M.Arch., M.Sc., MBA and PhD) programmes to about 4500 students in leading field of Engineering, Technology, Architecture, Management and Sciences. The institute is actively engaged in research, consultancy and developmental activities, besides imparting regular teaching.

About The Host Department

The Department of Chemical Engineering was commenced in the year 1988 with 30 undergraduate students in the B.Tech. Chemical Engineering programme and has been doing its best to bring about excellence in academics achieved in the last 25 years. The PG Programmes of M.Tech. in Chemical Engineering and Ph.D. was started in year 2006 and 2004 respectively. The current sanctioned strength of the B.Tech.

Chemical Engineering Program and M.Tech Chemical Engineering Program is 100 and 25 respectively for Full time Courses. The Department is well equipped with good undergraduate laboratories and research laboratories. The Department aims to provide students with a balance of intellectual and practical expertise that enables them to serve the worldwide chemical industry as well as the societal needs. The programmes offered by the department are accredited by NBA and has educational objectives that are consistent with the vision and mission of the department. The curriculum has been designed to meet the programme goals and objectives that lay more stress on learning under the guidance of a vibrant and highly qualified faculty.

GIAN Portal Registration

Step-1: One Time Web Portal Registration

Create login and password at <http://www.gian.iitkgp.ac.in/GREGN/index> login and complete the Registration Form and pay Rs. 500/- (non-refundable, GIAN Portal Registration Fee) through online payment gateway. After Payment select this course from the listed GIAN courses.

Download "pdf file" of the application form and forward to the course coordinator by email: vsr.chem@mnit.ac.in.

Step 2: Institute Registration

The registration form for this course can be found along with this brochure. The soft copy of brochure can be download from the institute website www.mnit.ac.in (GIAN portal). Participants are requested to fill the registration form and send to the course coordinator along with course registration fee. The registration fee details are listed below:

MNIT Course Registration Fee (exclusive of GIAN Portal Registration Fee)

Students (UG, PG, and PhD)	Rs. 1000
Academicians	Rs. 2500
Industry and Research	Rs. 2500
Participants from Abroad	US \$ 100

The above fee includes all instructional materials, computer use for tutorials and lab, free Internet facility, refreshments between sessions and working lunch. The accommodation will be provided to the outstation participants on payment basis subject to availability.

Mode of Payment

Participants are requested to send a Demand Draft in favor of **“REGISTRAR (SPONSORED RESEARCH) MNIT Jaipur”** payable at Jaipur with a print out of the filled in Registration form, by **Courier/ Speed Post/ Registered Post** before 20 August 2017 to: **Dr. V Subbaramaiah, Assistant Professor, Department of Chemical Engineering, J.L.N. Marg, MNIT, Jaipur-302017, Rajasthan, India**. Please label the envelop, "GIAN: Physical-Chemical Processes for Water and Wastewater Treatment". You may email a scanned copy of the DD and the signed registration form by the deadline to Dr. V. Subbaramaiah at vsr.chem@mnit.ac.in

How To Reach Jaipur

Jaipur is well connected by Air, Rail and Road with all the major cities in India. It is about 280 kms from New Delhi. It has direct flights from New Delhi (45 min), Mumbai (1.5 hrs), Hyderabad (1.45 hrs), Chennai (2.15 hrs), Bangalore (2.00 hrs) and Kolkata (2.2 hrs). The Institute is prominently located on JLN Marg and is 3 km from the Airport. It is 10 km from the main Railway Station and Bus Stand.

Local Accommodation

Accommodation at the Institute Guest houses will be available on payment basis. The details regarding boarding and lodging are as follows:

Rates:

Guest House 1 (Limited capacity): (Single occupancy, double-bedded a/c room): Rs. 750/- per day.

Guest House 2: (Single occupancy, double-bedded a/c room): Rs. 550/- per day.

Aurobindo Boys Hostel: (Single occupancy, double-bedded non a/c room): Rs. 100/- per day.

Gargi Girls Hostel: (Dormitory): Rs. 100/- per day There are many good fair price lodging facilities available nearby the campus.

TA/DA will not be paid for any participants.

Places To Visit

Jaipur is famous for its hospitality, culture, gems and jewelry, blue pottery, hand printed organic textiles and magnificent forts and palaces. Most prominent places to visit are Hawa Mahal, Jantar Mantar, City Palace, Albert Hall Museum, Amber Fort – Heritage Palace, Nahargarh fort, Jaigarh fort, Jal Mahal, Kanak Varindavan Garden, Govind Dev Ji temple and many more. You may also visit Agra for a day to visit one of the wonders Taj Mahal and Fetehpur Sikari. 150 km distance from Jaipur to Pushkar and Ajmeer.

Brief Profile of Resource Person



Dr. Tian C. Zhang is Professor in the department of Civil Engineering at the University of Nebraska-Lincoln (UNL), USA. He received his B.S. degree in Civil Engineering from Wuhan University of Technology, P.R.C. in 1982, M.S. degree in Environmental Engineering from Tsinghua University, P.R.C. in 1985, and Ph.D. in Environmental Engineering from the University of Cincinnati in 1994. He joined the UNL faculty in August 1994. Professor Zhang teaches courses related to water/wastewater treatment, remediation of hazardous wastes, and non-point pollution control. Professor Zhang's research involves fundamentals and applications of nanotechnology and conventional technology for water, wastewater, and storm water treatment and management, remediation of contaminated environments, and detection/control of emerging contaminants in the environment. Professor Zhang has published more than 106 peer-reviewed journal papers, 62 book chapters and 12 books since 1994. Professor Zhang is a member of the Water Environmental Federation (WEF) and

Association of Environmental Engineering and Science Professors (AEESP). Professor Zhang is a Diplomate of Water Resources Engineer (D.WRE) of the American Academy of Water Resources Engineers, Board Certified Environmental Engineers (BCEE) of the American Academy of Environmental Engineers, Fellow of American Society of Civil Engineers (F. ASCE), Fellow of American Association for the Advancement of Science (F.AAAS), and Academician of European Academy of Sciences and Arts (EASA). Professor Zhang is an Associate Editor of *Journal of Environmental Engineering* (since 2007), *Journal of Hazardous, Toxic, and Radioactive Waste* (since 2006), and the managing editor of *Water Environment Research* (since 2008). He has been a registered professional engineer in Nebraska, USA since 2000. He has received awards/honors from various professional organizations.

Course Coordinators



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Malaviya National Institute of Technology Jaipur
Department of Chemical Engineering



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21st-26th, August 2017

Under

Global Initiative of Academic Networks (GIAN)

Ministry of Human Resource Development

Govt. of India

REGISTRATION FORM

Name (In Block Letters):

Designation:.....

Qualification:

Institution:

Address:

Email address:

Mobile No:

Payment by DD in favor of “REGISTRAR, MNIT JAIPUR” payable at Jaipur.

Details of Demand Draft:

DD No: Bank Name:..... Date: Amount Rs:

.....
Signature of the Candidate

Speed Post

Dr. V Subbaramaiah

Assistant Professor

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