A Five Day GIAN Course
on
Modeling and Control of Wastewater Treatment Plants
November 19 - 23, 2018

Call for Registration and Participation

About GIAN

MHRD, Govt. of India has launched an innovative program titled “Global Initiative of Academic Networks (GIAN)” in higher Education, in order to garner the best international experience. As part of this, internationally renowned Academicians and Scientists are invited to augment the Country’s academic resources, accelerate the pace of quality reforms and elevate India’s scientific and technological capacity to global excellence.

Overview of the Course

Water plays a vital role and influences all spheres touching people, planet and prosperity. Water used by households and industry is typically collected via sewer systems bringing it to centralized wastewater treatment plants (WWTP). Managing this waste water is becoming increasingly crucial for ensuring a clean environment and public health in light of significant water scarcity being faced by many nations including India. The focus in the past was mainly on understanding and improving the biological processes and to achieve combined removal of organics and nutrients to levels below effluent limits. Today’s waste water treatment goes much beyond conventional processes of bringing down BOD and COD below prescribed level and now encompasses a plethora of different technologies with increasing focus on water recycle and reuse. Energy consumption has become another driver for WWTP optimization as well as carbon footprint. Wastewater treatment systems are becoming complex integrated systems. A trans-disciplinary approach is essential to design, develop and optimize new age wastewater treatment technologies and facilities. In order to understand these complex integrated systems, advanced tools such as advanced mathematical modelling, optimization, control and decision support systems are useful and provide incentives for efficient operation of WWTP. With this view in mind, this course will focus on recent trends in wastewater treatment, development of computational models for design, control and optimization.

The course will introduce participants the approaches and tools for the mathematical modeling and control of WWTP and will provide hands-on experience with simulation software WEST/GPS-X and model-based design, optimization and control of WWTP. Leading international academics and researchers with extensively recognized expertise, and demonstrated ability in teaching, consultancy, research, and training in the field of WWTP, modelling, dynamic optimization and control will deliver lectures and discuss industrially relevant case studies in the course.

Course Modules

- Introduction, Incentives for modeling in wastewater treatment; management and state of the art modeling practice, Mixing and hydraulics modelling
- Biokinetics modelling: Activated sludge models for WWTPs, Benchmark simulation models for WWTPs
- Control of WWTPs for improved effluent quality and energy efficiency.
- Energy efficient treatment of A-stage effluent: pilot-scale experiences with shortcut nitrogen removal
- Computational Fluid Dynamics for Wastewater treatment, Improved mixing modelling with compartmental models
- Detailed off-gas measurements for improved modelling of the aeration performance – Case study of Eindhoven WWTP.
- Population balance modeling applied to WWTP.
- Hands-on training using GPS-X/WEST software packages.

The Faculty

Prof. Ingmar Nopens, is an associate professor at Ghent University, Belgium leading the BIOMATH research group. His work focuses on model-based analysis and optimization of bioprocesses. One system that is studied intensively at BIOMATH is wastewater treatment. Different modeling frameworks (kinetic models, Computational fluid dynamics and Population Balance Models) as well as modeling methodologies are used to achieve this. He is heavily involved in the International Water Association (IWA) and also is member of its Fellow programme. http://biomath.ugent.be/biomath/biomath_staff.php

Dr. A. Seshagiri Rao is an Associate Professor in the Department of Chemical Engineering at NIT Warangal, India. His research interests include Process control, nonlinear dynamics, time delay systems, model based control, waste water treatment. He is recipient of INAE young engineer award and IIChE young researcher award in 2014. He is investigating modeling, control aspects in WWTP through funding from different sponsoring agencies. He has guided 3 PhD scholars and currently 5 PhD students are working with him.
http://www.nitw.ac.in/nitw/div/view.php?facultyid=16460

Who can Participate?

- Faculty members/research scientists/engineers/students with relevant engineering background and interested in modeling, simulation and control of wastewater treatment plants.

How to Register?

Stage-1: Web Portal Registration: Visit
http://www.gian.iitkgp.ac.in/GREGN/index
and create login User ID and Password. Fill up the blank registration form and do web registration by paying Rs. 500/- online through Net Banking/Debit/Credit card. This provides the user with life time registration to enroll in any number of GIAN courses offered.

Stage-2: Course Registration:
Login to the GIAN portal with the user ID and Password already created in Step 1. Click on Course Registration option at the top of Registration form. Select the Course titled "**Modeling and Control of Wastewater Treatment Plants**" from the list and click on Save option. Confirm your registration by clicking on Confirm Course.

Registration Fee:

Faculty	**Rs. 5,000/-**
Participants from Industry /Research Organizations	**Rs. 10,000/-**
Students & Research Scholars • Without award of Grade • With award of Grade	 **Rs. 1,500/-** **Rs. 2,000/-**
Students from abroad	**US$ 300**

The Registration fee includes instructional materials, tutorials, laboratory and computer use and free internet facility. The participants from academic/research institutes and Industry will be provided with boarding and lodging on additional payment of Rs. 4,000/- in Visitors Block on sharing basis. Students & Research Scholars will be provided with boarding and lodging in Institute Hostels on additional payment of Rs. 2,000/-.

Selection and Mode of Payment

Selected candidates will be intimated through e-mail. They have to remit the necessary course fee to the Bank as per the details given below. **Outstation participants requiring accommodation and boarding facilities have to pay the additional fee as specified above.** Candidates registering early will be given preference in short listing process.

Account Name	**GIAN NITW**
Account No.	**62447453600**
Bank	**State Bank of India**
Branch	**NIT Branch**
Branch Code	**20149**
IFSC Code	**SBIN0020149**
SWIFT Code	**SBININBBH14**

About the Institute and Warangal

National Institute of Technology, Warangal (NITW) formerly known as RECW is the first among seventeen RECs set up in 1959. Over the years, the Institute has established itself as a premier Institution in imparting technical education of a very high standard, leading to B.Tech, M.Tech and Ph.D. programmes in various specializations of Science and Engineering streams. Warangal is known for its rich historical and cultural heritage. It is situated at a distance of 140 km from Hyderabad. Warangal is well connected by rail and road. National Institute of Technology, Warangal campus is 2 km away from Kazipet railway station and 12 km away from Warangal railway station.

About the Department

The Department of Chemical Engineering at NIT Warangal was established in the year 1964 and celebrated Golden Jubilee year in 2014. The Department offers B.Tech in Chemical Engineering, two M.Tech programmes (each in Chemical Engineering and Process Control) and Ph.D programs. Currently, the Department has 20 faculty members with different research expertise. The Department has good research facilities for both experimental as well as simulation based research.

For any queries regarding registration of the course, please contact the National Coordinators:

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