GLOBAL INITIATIVE FOR ACADEMIC NETWORKS

Ministry of Human Resource Development
Government of India

सत्यमेव जयते

GLOBAL INITIATIVE FOR ACADEMIC NETWORKS

National Coordinating Institute
INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

www.gian.iitkgp.ac.in

MODELING FATE AND TRANSPORT OF ENVIRONMENTAL POLLUTANTS

Overview

Environmental modeling relies heavily on system-based approach to generalize environmental processes to make spatial and temporal predictions about the environmental fate and transport of anthropogenic pollutants. Environmental system processes are difficult to understand, primarily due to the enormous complexity and interrelationships involved. This problem is further compounded by the fact that environmental processes often do not remain restricted to one environmental media. Environmental persistence and mobility of various organic pollutants in multi-media (surface water, air, soil, and groundwater) environments requires modeling to predict the fate and transport of environmental pollutants.

Pure mathematical modeling can be difficult to understand if the developed model is not simulated and tested for different situations. Mathematical models without simulation may not be effective and may not provide an enhanced learning experience to students. Modeled processes will be simulated using STELLA software. The objective of this course is to demonstrate the effectiveness of mathematical modeling approach through model development, simulation and validation. This course demonstrate the effectiveness of modeling of selected environmental processes such as a biotic degradation (hydrolysis, photolysis and sorption), transformation and deposition of gaseous pollutants, transformation and metabolites rate kinetics. The modeled environmental processes will be tested for statistical validity through three different statistical approaches.

Modules	**A: Basic Concepts of Environmental System Modeling: 6 June to 14 June,2016** **B: Mathematical Modeling of Fate and Transport of Organic Pollutants in the Environment-Model Development and Simulation:15 June to 27 June,2016**
Who Should Attend	• you are a civil/environmental scientist or engineer interested in understanding how pollutants behave in the environment • you are a student or faculty from an academic institution interested in applying environment models to predict the fate and transport of pollutants • you are working for an environmental regulatory agency and would like to use risk based corrective action protocol using fate and transport models

Fees

The participation fees for taking the course are as follows:

Participants from abroad :	**$ 500/-**
Participants from India:	
Industry/ Research Organizations/ Academic institutions:	**₹ 20,000/-**
Bonafide students of Academic Institutions:	**₹ 1000 (to be refunded after completion of course)**

The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free Internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

Dr. Sudarshan Kurwadkar is currently an Assistant Professor of Civil and Environmental Engineering at the California State University – Fullerton, California, USA. His research interests are in understanding the fate and transport of emerging contaminants such as pharmaceuticals, perfluorinated compounds and insecticides in the environment; sorption and degradation kinetics of organic contaminants, water quality, storage and disposal of hazardous wastes, and environmental engineering education.

Sudha Goel is currently Associate Professor in Indian Institute of Technology Kharagpur. Her teaching and research interests include solid and hazardous waste management, water quality and treatment, environmental impact and risk assessments, and energy issues.

Course Co-ordinator

Sudha Goel, Ph.D

Associate Professor, IIT Kharagpur

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Registration Process

Registration for GIAN courses is not automatic because of the constraints on maximum number of participants allowed to register for a course. In order to register for one or multiple non-overlapping courses, you have to apply online using the following steps:

1. **Create login and password at www.cep.iitkgp.ac.in/gian**
2. **Login and complete the registration form.**
3. **Select courses**
4. **Confirm your application and payment information.**
5. **Pay ₹ 500 (non-refundable) through online payment gateway.**

The course coordinators of the selected courses will go through your application and confirm your selection as a participant one month before the starting date of the courses. Once you are selected you will be informed and requested to pay the full fees through online payment gateway service.