

# Quantitative Assessment

# Microbial

# Risk

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## Overview

In India, the current environmental studies curriculum lacks focus on human health-risk issues, particularly for emerging microbial risks, such as antibiotic resistant pathogens, novel viruses (e.g., H1N1 influenza, SARS), the relationship between urban sanitation and water infrastructure and waterborne disease transmission, etc. and thus it warrants course to prepare students to address human health risk issues. Currently, the Indian institutions, the I.I.T., IIPH, etc. already teach, research and prepare students on environmental risk assessment, however, these schools lack in providing detailed training on microbial risk assessment. The proposed course with the Professor from Drexel University, USA aims to train students, teachers to a proven curriculum in microbial risk assessment, and access to an online knowledge repository which is currently in development ([http://wiki.camra.msu.edu/index.php?title=Main\\_Page](http://wiki.camra.msu.edu/index.php?title=Main_Page)) so that Indian participants can access accumulated international knowledge in the field. The human resource built-up through this GIAN program (i.e., Microbial Fellows) will train students, teachers, engineers, doctors, and health administrators on human health risk issues. The developed course will be taught in I.I.T. Delhi. These courses will also be available to other schools in India through the GIAN website and teachers will be trained on these courses.

## Course Outline

This course is scheduled from June 18<sup>th</sup> 2018 (Monday) to June 29<sup>th</sup>, 2018 (Friday). Course objectives will be covered in ten days which includes lectures and case study sessions. The primary objectives of the course are as follows:

- i) to teach concepts of microbial risk assessment
- ii) to teach a systematic approach for estimating risk of microbial infection
- iii) to provide tools for approaching problems related to pathogen exposure

<b>Modules</b>	<p><b>Quantitative Microbial Risk Assessment: June 18<sup>th</sup>-June 29<sup>th</sup>, 2018 at Indian Institute of Technology (IIT) Delhi</b></p> <p><b>Contents:</b>  Risk assessment framework; Statistics for risk assessment; Pathogens: mapping attributes to risk; Introduction to the QMRA Wiki; Monte Carlo uncertainty analysis; Occurrence and fate in the environment; Microbes of interest and parameters; Environmental fate exercise; Human exposure assessment; Case study example: biosolids in USA; Microbial persistence modelling; Microbial dose response estimation; Deciding about risk: decision trees, standards, thresholds, and benefit-cost analysis; Case study example: responding to bioterrorism; Secondary transmission modelling; Bootstrapping fundamentals; First order uncertainty analysis; Stakeholder engagement; Risk management</p> <p><b>Number of participants for the course will be limited to <u>thirty</u>.</b></p>
<b>Who can attend</b>	<ul style="list-style-type: none"> <li>▪ Practicing engineer/scientist/researcher from government organizations/ research laboratories/consulting groups/industries working in areas related to environmental engineering, environmental science, and public health.</li> <li>▪ Students (Bachelors/Masters/PhD) and faculty from academic institutions interested in the fields of environmental engineering, science and public health.</li> </ul>
<b>Registration Procedure</b>	<p><b>Step 1: GIAN Web Portal Registration:</b> Register in the GIAN portal <a href="http://www.gian.iitkgp.ac.in/GREGN/index.">http://www.gian.iitkgp.ac.in/GREGN/index.</a>, by paying Rs. 500/- online. Registration to this portal is one time affair and will be valid for lifetime of GIAN. Please note that Course fee is separate.</p> <p><b>Step 2: Course Registration:</b> Login to the GIAN portal with the registered User ID and Password. Choose for the Course registration option. Select the course titled “Quantitative Microbial Risk Assessment” from the list and click the “Save” option. Confirm your registration by clicking the suitable option.</p> <p><b>Last date for the registration of this course is May 30<sup>th</sup>, 2018.</b></p> <p><b>Step 3: Course Shortlisting:</b> Candidates will be intimated through email regarding their selection.</p> <p><b>Step 4: Course Fee Remittance:</b> Once you receive the intimation from the Course Coordinator, the fee (as applicable) need to be paid. The participation fees for taking the course is as follows:</p> <p><b>Students from other Academic Institutes: Rs. 5,000</b>  <b>Faculty from other Academic Institute: Rs. 10,000</b>  <b>Professionals from Industry/ Research Organizations: Rs. 15,000</b>  <b>Participants from abroad: US \$250</b></p>

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

The details of fee payment by Electronic Clearing Service/ RTGS in the name of "IITD CEP ACCOUNT":

Bank Name	State Bank of India
Branch Name & Address	IIT Delhi, Hauz Khas, New Delhi – 110016
IFS Code	SBIN0001077
MICR Code	110002156
Type of Account	Saving Account
Bank Account No.	36819334799
SWIFT Code	SBININBB547
IITD PAN No.	AAATI0393L

**Step 5: Send Registration Form to Course Coordinator:** Fill up the registration form (Given in Page 5 of this brochure), by providing details of the bank transaction. Send the registration form to the Course coordinator at [arunku@civil.iitd.ac.in](mailto:arunku@civil.iitd.ac.in) before May 30<sup>th</sup>, 2018.

## The Faculty



**Prof. Patrick L. Gurian** is an Associate Professor in the Department of Civil, Architectural, and Environmental Engineering at Drexel University. Prof. Gurian has extensive experience in the field of quantitative microbial risk assessment. He is currently principal investigator of a 2.5 million US dollar project on water quality in buildings which is analyzing microbial risks due to the growth of opportunistic pathogens in building plumbing systems. More details can be found at:

<http://drexel.edu/cae/contact/faculty/GurianPatrick/>



**Prof. Arvind K Nema** is a Professor with the Department of Civil Engineering, IIT Delhi and has more than 15 years of experience in working on environmental management issues. He has been contributing as expert member in the technical committee for utilization of hazardous waste as a supplementary resource or for energy recovery or after processing under Rule 11 of Hazardous Waste (Management, Handling and Trans boundary Movement) Rules 2008. More details can be found at:

[https://www.researchgate.net/profile/Arvind\\_Nema](https://www.researchgate.net/profile/Arvind_Nema)



**Prof. Arun Kumar** is currently working as an associate professor in the Department of Civil Engineering at I.I.T. Delhi (India). He teaches environmental engineering, environmental risk assessment, and water and wastewater treatment processes to undergraduate and post-graduate students. More details in <http://web.iitd.ac.in/~arunku/>

## Course Coordinators

**Prof. Arun Kumar**

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**Prof. Arvind Kumar**

Phone: +91 11 2659 6423

E-mail: [aknema@civil.iitd.ac.in](mailto:aknema@civil.iitd.ac.in)

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**GIAN Course  
on  
QUANTITATIVE MICRIBIAL RISK ASSESSMENT**

**(June 18<sup>th</sup>-June 29<sup>th</sup>, 2018)**

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*Designation:* \_\_\_\_\_

*Organization:* \_\_\_\_\_

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**Fees Payable to "IITD CEP ACCOUNT", SBI, IIT DELHI**

Transaction No.: \_\_\_\_\_

Dated: \_\_\_\_\_

Bank Name: \_\_\_\_\_

Rs. \_\_\_\_\_

Signature of Applicant