

# Dynamic Modelling of Stormwater, Sewerage, and Watershed Systems with SWMM/PCSWMM

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## Overview

Proper collection and disposal/treatment of stormwater and sewerage is of prime importance in maintaining the quality of life by minimizing hazardous or nuisance floods and human health impacts and sustaining healthy water resources. Modelling is an extremely important tool in this regards from planning to detailed design stage for existing and new water systems specially to simulate complications from increased urbanization, population growth as well as climate change.

Stormwater Management Model (SWMM) is a dynamic hydrology-hydraulics water quality simulation model that have been used throughout the world, for planning, analysis and design related to stormwater, sewerage, and watershed systems over 40 years. SWMM is a public domain software maintained by the United States Environmental Protection Agency (US EPA) but continues to undergo refinement and enhancements with user support. PCSWMM is a spatial decision support system for SWMM5. While completely compatible with SWMM5 it provides intuitive and user friendly features that allow users to setup, parameterize, calibrate, run and infer results for stormwater, sewerage, and watershed systems.

This workshop covers introduction to SWMM5 and PCSWMM, fundamentals of SWMM hydrology/hydraulics and modelling procedures (discretization, parametrization, sensitivity, calibration, error analysis and inferring results) for stormwater, sewerage and watershed systems. It is focused on a hands-on approach providing practical experience starting from new drainage system design, system evaluation using multiple design storms, dual-drainage (major/minor) modelling and design, detention pond design for mitigation of peak flow and extends to cover more advanced topics such as water quality, watershed floodplain analysis, Low Impact Developments (LIDs), and SWMM5/PCSWMM integrated 1D-2D modelling. The workshop also exposes attendees to the various GIS and time series analysis tools available in PCSWMM including watershed delineation/parameterization tools and frequency analysis tool. The overall goal of this workshop is to familiarize attendees with SWMM hydrology and hydraulic modelling to build a model, evaluate, calibrate and infer results and increase their confidence to explore SWMM/PCSWMM modelling environment further.

# Course Outline

This course is scheduled from September 10 (Monday) to September 14 (Friday) 2018. Course objectives will be covered in five days, with lectures spanning for total 11 hours and tutorials spanning for total 29 hours. The primary objectives of the course are as follows:

- Understanding the fundamentals of SWMM hydrology and hydraulics, applications of stormwater, sewerage, watershed modelling with low impact development (LID) and flooding with 2D modelling and also cover model calibration.
- Its applications for modelling on urban scenarios.

<b>Modules</b>	<p><b>Dynamic Modelling of Stormwater, Sewerage, and Watershed Systems with SWMM/PCSWMM: September 10 – September 14, 2018 at Indian Institute of Technology (IIT) Delhi</b></p> <p><b>Contents:</b></p> <ul style="list-style-type: none"> <li>▪ Introduction to fundamentals of SWMM/ PCSWMM hydrology/hydraulics and modelling procedures for stormwater, sewerage and watershed systems.</li> <li>▪ SWMM5/PCSWMM integrated 1D-2D modelling.</li> <li>▪ Introduction to various GIS and time series analysis tools available in PCSWMM including watershed delineation/parameterization tools and frequency analysis tool.</li> <li>▪ Hands-on approach providing practical experience starting from new drainage system design, system evaluation using multiple design storms, dual-drainage (major/minor) modelling and design, detention pond design for mitigation of peak flow and extends to cover more advanced topics such as water quality, watershed floodplain analysis, Low Impact Developments (LIDs)</li> </ul> <p><b>Number of participants for the course will be limited to forty.</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 water resources/remote sensing fields.</li> <li>▪ Students (Bachelors/Masters/PhD) and faculty from academic institutions interested in the fields of hydrology or geo-informatics or remote-sensing or atmospheric science or environmental science.</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 “<b>Dynamic Modelling of Stormwater, Sewerage, and Watershed Systems with SWMM/PCSWMM</b>” from the list and click the “Save” option. Confirm your registration by clicking the suitable option.</p>

**Last date for the registration of this course is 1<sup>st</sup> July 2018.**

**Step 3: Course Shortlisting:** Candidates will be intimated through email regarding their selection.

**Step 4: Course Fee Remittance:** 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:

**Students from other Academic Institutes: Rs. 5,000**

**Faculty from other Academic Institute: Rs. 10,000**

**Professionals from Industry/ Research Organizations: Rs. 15,000**

**Participants from abroad: US \$250**

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”:

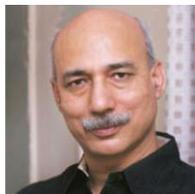
Bank Name	State Bank of India
Branch Name & Address	IIT Delhi, Hauz Khas, New Delhi – 110016
IFS Code	SBIN0001077
MICR Code	110002156
Type of Account	Saving Account
Bank Account No.	36819334799
SWIFT Code	SBININBB547
IITD PAN No.	AAATI0393L

**Step 5: Send Registration Form to Course Coordinator:** Fill up the registration form (Given in Page 6 of this brochure), by providing details of the bank transaction. Send the registration form to the Course coordinator at [dhanyact@gmail.com](mailto:dhanyact@gmail.com)/[dhanya@civil.iitd.ac.in](mailto:dhanya@civil.iitd.ac.in) on or before 15<sup>th</sup> July 2018.

## The Faculty



Dr. Perera is currently working as a senior water resources engineer at Computational Hydraulics International (CHI) where he leads the research and development branch. Since joining CHI, he led many modelling projects including stormwater systems with major, minor drainage systems, wastewater collection systems with separate and combined sewers, Low impact development, 1D and 2D flood analysis, watershed modelling with Radar rainfall analysis Rural SWMM modelling and water quality applications. He has a strong background in hydrology, hydraulics and water quality modelling. Dr. Perera He is also involved with developing, enhancing, and testing modelling capabilities of PCSWMM including 2D modelling, watershed delineation, alternative runoff methods, implementation of MUSLE overland erosion routines, storm distributions, rainfall disaggregation, and many GIS and time series analysis tools.



Prof. Gosain is a Professor in the field of Water Resources Engineering and GIS Technologies, in the Civil Engineering Department, IIT Delhi. He has been associated with the research and development work in the area of hydrological modeling, urban hydrology, water management, climate change impact assessment, Geographic Information System, and many allied areas. Prof. Gosain has served on many prestigious assignments with the World Bank, DFID, USAID and many Ministries and State Governments. Prof. Gosain has to his credit above hundred papers published in refereed national and international journals and conferences. Prof. Gosain served as the Team Leader of the Water Resources Management group, Ganga River Basin Management Plan (GRBMP). He has served as Head of the Civil Engineering Department and the Computer Services Centre of IIT Delhi.



**Prof. Dhanya C.T.** is an Assistant Professor at the Indian Institute of Technology (IIT) Delhi. Her research is primarily focused in unveiling different aspects of hydro-climatology, a multidisciplinary field integrating hydrology and climate science. She has published more than thirty research articles in international and national peer reviewed journals. She is the recipient of numerous awards such as “NASI Young Scientist Award”, “IEI Young Engineers Award”, Young Associate of Indian Academy of Sciences (IASc) etc. More details in <http://web.iitd.ac.in/~dhanya/>.

### Course Coordinators

#### **Prof. A. K. Gosain**

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**REGISTRATION FORM**

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**GIAN Course  
on  
Dynamic Modelling of Stormwater, Sewerage, and Watershed Systems with  
SWMM/PCSWMM (10<sup>th</sup> – 14<sup>th</sup> September 2018)**

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

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

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

Address: \_\_\_\_\_

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E-Mail: \_\_\_\_\_

Phone: \_\_\_\_\_

Mobile: \_\_\_\_\_

Fax: \_\_\_\_\_

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

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

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

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

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

Signature of Applicant