Water Sensitive Urban Design and Integrated Urban Water Management

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Overview

Water Sensitive Urban Design is supported by a philosophy of providing urban water services that considers the site specific opportunities and limitations of development to provide water services in a way that protects and enhances local hydrological and ecological integrity and considers all flows in the urban water cycle as valuable resources. Incorporating WSUD as a mainstream practice in urban developments will improve resilience to reduced yield from water catchments due to potential climate change impacts. WSUD is seen as a component of integrated urban water management (IUWM). IUWM promotes a coordinated planning approach to drinking water, wastewater and stormwater services that takes into consideration the overall sustainability of urban developments and the implications of water services in other areas as: energy demand, greenhouse gas emissions, solid waste generation, nutrient losses, life cycle cost, and community acceptability.

WSUD systems are also known as sustainable drainage systems (SUDS) in the United Kingdom, stormwater best management practices (BMP) and low impact development (LID) in USA and also most of these systems are widely covered under the term green infrastructure. A definition of decentralised systems was developed around the current recognition of the role of decentralised water, wastewater and stormwater systems in mitigating the environmental impact of urban developments. The definition also highlighted the drivers for the implementation of decentralised systems which included: overcoming the limited capacity of local water and wastewater services, protecting sensitive environments, showcasing examples of sustainable development, water conservation, landscape amenity and promotion of innovation and technology.

Urban society has also developed the aspiration to be more locally self-sufficient and to protect the remaining natural urban ecosystem, involving effluent reuse, stormwater capture and reuse, rainwater tanks, combined with more energy efficient technologies. The specific drivers for WSUD also varied between countries, with North America initially focusing on water quality improvement, whilst much of Europe was driven by the need to reduce local flooding and overflows from their “combined sewers”, which carry both stormwater and sewage. Australia focused on water quality protection, waterway ecosystem protection and littoral zone conservation, whilst other countries, such as China, are facing urban water shortages that somewhat perversely are accompanied by regular flooding, and impaired stormwater quality.

Even though these approaches are comparatively new, however, there are today a wide range of WSUD technologies, design models, descriptive terms, driving objectives, guidelines, regulations, effectiveness metrics and economic values as part of journey to urban sustainability.

WSUD approaches are implemented in existing and new developments to address impacts from climate change, urbanization and population growth. Incorporating WSUD as a mainstream practice in urban developments can play a significant role in the transition from the current water, wastewater and storm water systems to a more sustainable paradigm including mitigating impacts from climate change and urbanization. WSUD systems can deliver multiple benefits including water supply, storm water quality improvements, flood control, landscape amenity, healthy living environment, and ecosystem health improvement of urban waterways.

Course participants will learn these topics through lectures and hands-on experiments. Also, case studies and assignments will be shared to stimulate research motivation of participants.

Modules	**(A) Water sensitive urban design, Integrated Urban: Water Management, Rainwater Harvesting and Communal Rainwater Tank Systems** **December 19 – 23, 2022** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	▪ **you are a civil engineer, hydrologist or research scientist interested in water-sensitive urban design, integrated water management, planning and design of sustainable urban water services.** ▪ **you are a student of B.Tech. or M.Tech. or Ph.D. pursuing from academic institutions interested in higher studies in the field of hydrology and hydraulics and want to learn water-sensitive urban design and its applications.** ▪ **you are a faculty from an academic institution interested in learning how to do research on water-sensitive urban design, integrated urban water management, planning, and design of a rainwater tank system or a communal rainwater tank system.**
Fees	The participation fees for taking the course is as follows: **Participants from abroad: US $100** **Industry/ Research Organizations: Rupees 10000** **Academic Institutions: Rupees 3500 for students and Rupees 6000 for faculty.** The above fee includes all instructional materials, computer use for tutorials, assignments, and laboratory equipment usage charges. The participants will be provided with accommodation on a payment basis.

The Faculty

Assoc. Prof. Ashok Kumar Sharma is the faculty of Victoria University Melbourne Australia. His research interests include Hydraulics and hydrology, integrated urban water management, water sensitive urban design and centralized water and waste water.

Dr. Pramod Kumar Sharma is an Associate Professor of Indian Institute of Technology, Roorkee. His research interest is Groundwater hydrology and hydraulics, mathematical and numerical modeling, flow and contaminant transport.

Course Co-ordinator

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