



RURAL WATER RESOURCES MANAGEMENT

PROF. PENNAN CHINNASAMY

Department of Multidisciplinary
IIT Bombay

INTENDED AUDIENCE : Students in Civil Engineering, Rural Development, Earth Science, Geology and Rural development department

COURSE OUTLINE :

Water is the most important resource in India, given India is still an agrarian nation and most industries need water. India is the highest extractor of groundwater in the world and it is necessary to understand water resource issues and concerns so that water resources management activities can be scientifically formulated and validated. A focused course on water management is necessary to sensitize the students on the actual issues and how to manage, adapt and mitigate. In addition, good water management is key for attaining sustainable development goals, protecting a country against climate change extremes and for promoting industrial growth in India.

ABOUT INSTRUCTOR :

Prof. Pennan Chinnasamy obtained his Masters degree in Physics from Wesleyan University, Connecticut - US, followed by a doctoral degree, with focus on hydrology, from University of Missouri, US. After his Research fellow position with Ashoka Trust for Research in Ecology and the Environment (ATREE), he joined the International Water Management Institute (IWMI) as a Researcher (Geohydrology and Remote Sensing), and was stationed in Nepal and Indian offices, where he focused on climate change impacts on under developed and developing nations. He then joined Nanyang Technological University, Singapore, as a Senior Researcher developing real time flood predicting models for Singapore. He is currently an Assistant Professor with Indian Institute of Technology, Bombay - India, under the Centre for Technology Alternatives for Rural Areas (CTARA) department, where his work primarily focuses on natural resources assessment, monitoring and management in rural regions. He is the founding director of the Rural Data Research and Analysis (RuDRA) lab, which is the first Big data lab for rural regions, housed in an academic institution in India. He is also an associate faculty with the Interdisciplinary Climate Program and Policy Study Centre in IITB. Pennan is also a visiting professor with University of Oulu, Finland. Over the past decade, Pennan has experience working in NGOs, national and regional government agencies and academic institutions, focusing on sustainable surface and groundwater management plans, climate change impacts, large data analysis and hydrological simulation models. His work has been recognized in many internationally peer reviewed journals, policy briefs and government reports (e.g. EPA, NEA- Nepal, World Bank, Asian Development Bank) and are being used to formulate scientifically validated best management plans.

COURSE PLAN :

- Week 1:** Importance of water resource management in India and Introduction to Hydrological Cycle and representations
- Week 2:** Key Hydrological Parameters 1
- Week 3:** Key Hydrological Parameters 2
- Week 4:** Introduction to Groundwater hydrology
- Week 5:** Groundwater components
- Week 6:** Surface water hydrology
- Week 7:** Water Mass Balance Equation
- Week 8:** Rural water management issues, data challenges and observation records.
- Week 9:** Rural water resource management infrastructure (engineered)
- Week 10:** Rural water resource management infrastructure (nature based)
- Week 11:** Solving case studies in rural water resource management
- Week 12:** Rural hydrological databases for India.