AVAILABILITY AND MANAGEMENT OF GROUNDWATER RESOURCES

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PRE-REQUISITES : B.Tech/BE in Civil or Environmental or Msc in Environmental science.

INTENDED AUDIENCE : Research, Students, Officials from Industry

INDUSTRY SUPPORT : Research Institute/ PSUs/ Govt. Institute.

COURSE OUTLINE :

Water is a fundamental natural resource that influences human health, ecology and economic development. Almost all activities such as domestic, agriculture and industrial demand we use water. Although water in nature is the most important and abundant compound but less than 1% of world water resources is available for our use. Though the world has achieved tremendous progress in all fields of science and technology but adequate and safe drinking water is still a distance dream for many people. This is due to the uneven distribution of water. Hence, there is a need to find out the availability and management of the water resources of our country with natural perspective.

ABOUT INSTRUCTOR :

Prof. P. K Singh, from IIT(ISM), Dhanbad, is basically Geologist. He did Post graduation in Environmental Science & Engineering and doctorate in Environmental Hydrogeology. Presently, he is an Associate Professor in the Dept. of ESE, IIT(ISM), Dhanbad. He had also worked about fourteen years as a Research Fellow and Scientist in Environmental Management Group, CIMFR (CSIR), Dhanbad. He is working mainly in the area of Water Resource Planning & Management and completed few R&D projects of Ministry of Water Resources, GMDC, UGC etc. Prof. Singh is the Member of International Association Of Hydrological Sciences (IAHS), Institute of Hydrology. Wallingford, Oxfordshire, U.K.; Life Member of the Indian Association of Hydrologists, Roorkee ,Fellow of the Society of Earth Scientists, Lucknow, Life Member of Indian Geological Congress (LM – 811).,Life Member of the Mining, Geological and Metallurgical Institute of India (MGMI), NABET-QCI accreditation for preparation of EIA as Functional Area Expert for Geology, Landuse & Hydrogeology. and Life Member of the Indian Water Work Association. He has guided more than twelve Ph. D. and about fifty M.Tech. scholars till date. He has published more than 60 international and national research publications in the area of Water Resource Planning & Management. He was the recipient of Research Ratna Award 2019 from World Research Council in the year 2019. He had visited USA, Italy, Singapore in connection with academic activities.

COURSE PLAN :

Week 1: Introduction of hydrological cycle, need for conservation of groundwater resources
Week 2: Geologic formations as aquifers
Week 3: Vadose and saturated zones
Week 4: Confined and unconfined aquifers and their parameters
Week 5: Porosity, permeability, transmissivity and storage coefficient
Week 6: Law of groundwater movement, Darcy’s law and applications
Week 7: Estimation of Subsurface runoff, Types of wells, Well Hydraulics
Week 8: Measurement of rainfall, Index of wetness, Infiltration rate
Week 9: Estimation of Total Annual Replenishable Natural Groundwater Recharge
Week 10: Groundwater resources planning and management
Week 11: Rainwater Harvesting and Artificial groundwater recharge
Week 12: Impact of climate change on water resources