J.S. University, Shikohabad

Established by UP Govt. Act No. 07 of 2015
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Value Added Course

(Ground Water Engineering)

Faculty of CIVIL ENGINEERING

	J.S. University, Shikohabad Faculty of Civil Engineering	Value Added Course
		AY: 2022-23

Ground Water Engineering

Learning Objective:

This Course will provide knowledge of Engineering of ground water.

Duration: 30 Hours. (Theory and Practical)

Course Outcomes: -

Maximum Exposure has to be given on Practical Oriented

On successful completion of the course students will be able to explain :

1) Various components of hydrologic cycle that affect the movement of water in the earth

2)Various Stream flow measurements technique

3) the concepts of movement of ground water beneath the earth

4) the basic requirements of irrigation and various irrigation techniques, requirements of the crops

5) Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design

6) Basic components of river Training works.

7) Apply math, science, and technology in the field of water resource Engineering.

	J.S. University, Shikohabad Faculty of Civil Engineering	Value Added Course AY: 2022-22

Syllabus Outline

1. **Module-1**

   Properties of Aquifers

   Formation constants, compressibility of aquifers, Equation of motion for steady and unsteady ground water flow in isotropic homogeneous aquifers, Dupit`s assumptions. Unconfined flow with a recharge, tile drain problem. Ground water exploration and methods of investigations.

2. **Module-2**

   Effect of boundaries

   Interference of water, leaky aquifers, Thiem`s equilibrium formula for unconfined and confined aquifers and determination of hydraulic properties of aquifers. Partial penetration of an aquifer by a well, spherical flow in a well. Non equilibrium formula for aquifer (unsteady radial flows).

3. **Module-3**

   Tube wells

   Optimum capacity, silting of tube well, design of tube wells in different aquifers, tube well types, parts, bore hole, strains, its types, well pipe, casing pipe, blind pipe. Construction and working of tube wells, site selection, drilling operation, cable tool method, hydraulic method, rivers Rotary Method and drilling fluids, well screen assembly installation, verticality and alignment of tube wells, gravel packing, development of tube wells, sickness, in construction and corrosion and failure of tube wells, Pumping equipment and hydraulic testing of pumps.

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References:-

1) "Groundwater Hydrology", D.K.Todd, John Wiley & Sons Inc.Newyork
2) "Groundwater", H.M.Raghunath, Wiley Eastern Ltd., N.Delhi
3) "Emerging Issues in Groundwater Resources" by Ali Fares (Editor)

(Name of Faculty)	(Name of Faculty)	(Name of Faculty)
Course Coordinator	Dean Academics	Director/Principle/Dean of Faculty/Department
Er. Chhavi Lal	Dr. A Khilesh	Er. Amit Kumar Yadav