

Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim- Goa

Name of Faculty: Diksha Karapurkar

Subject: Geology

Paper code: GEO 321: Hydrogeology

Program: T.Y.B.Sc.

Division: -

Academic year: 2025 - 2026

Semester: V

Total Lectures: 36

Course Objectives: The objectives of this course are to:

- 1. Describe the occurrence and movement of freshwater on Earth.
- 2. Illustrate the occurrence of groundwater and its flow.
- 3. Discuss water quality parameters and standards.

Course Outcomes:

At the end of the course the student will be able to:

- 1. Measure the various components of the hydrological cycle.
- 2. Recognize types of aquifers and infer groundwater flow direction.
- 3. Prepare and interpret stream hydrographs.
- 4. Assess groundwater quality.

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
July	02/07/2025	05/07/2025	1	- Hydrological cycle and components: precipitation, evaporation,	Identify components of	PPT, Chalk & Board Todd, 2006	Karanth K.R., (1987). Groundwater:

				transpiration, evapotranspiration	hydrological cycle		Assessment, Development and Management, Tata McGraw-Hill Pub. Co. Ltd 5. Raghunath, H. M. (2007). Ground water. New Age International. 6. Todd, D.K. (2006). Groundwater Hydrology, 2nd Ed., John Wiley & Sons, N.Y.
July	07/07/2025	12/07/2025	1	- Surface storage, overland flow, infiltration and soil moisture	Sketch hydrological cycle	Video, Chalk & Board	
July	14/07/2025	19/07/2025	2	- Interflow, percolation, groundwater recharge and storage	Assignment on recharge processes	PPT	
July	21/07/2025	26/07/2025	2	- Baseflow and surface runoff, watershed and drainage network	Class quiz on runoff	PPT, Group discussion	
July - August	28/07/2025	02/08/2025	2	- Measurement instruments for precipitation, evapotranspiration, infiltration, and streamflow	Prepare list of instruments	PPT, Videos	
August	04/08/2025	09/08/2025	2	- Concept of watershed, drainage network and relation to infiltration	Assignment on watershed delineation	PPT, Field visit	
August	11/08/2025	16/08/2025	3	- Water table, piezometric head, anisotropy and heterogeneity of aquifers	Sketch piezometric surface	PPT, Board	
August	18/08/2025	23/08/2025	3	- Darcy's law and groundwater flow	Numerical on Darcy's law	Chalk & Board	
September	02/09/2025	06/09/2025	3	- Aquifer parameters: specific retention, yield, transmissivity, storativity	Solve numerical problems	PPT, Board	
September	08/09/2025	13/09/2025	3	- Groundwater recharge estimation (GEC 1997), Groundwater distribution in India	Assignment on recharge estimation	PPT, Reading	
September	15/09/2025	20/09/2025	3	- Groundwater chemistry: physical and chemical properties	Lab-style report on parameters	PPT, Video	
September	22/09/2025	27/09/2025	3	- Water quality standards (ISI) for drinking and irrigation	Compare water samples to ISI	PPT	
September - October	29/09/2025	04/10/2025	3	- Seawater intrusion in coastal aquifers, groundwater pollution	Short case study	Videos, PPT	
October	06/10/2025	11/10/2025	3	- Artificial groundwater recharge methods	Assignment on recharge techniques	PPT, Chalk & Board	

October	13/10/2025	17/10/2025	2	-	Revision of key concepts	Group quiz	Discussion	
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* Assessment Rubrics

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5