

Semester Lecture Plan

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

Name of Faculty: Shritesh Mhapsekar

Subject: Geology

Paper code: GEO-321; Hydrogeology

Program/Course: TY B.Sc.

Division:

Academic year: 2026- 2027

Semester: V

Total Lectures: 45

Course Objectives:

1. Describe the occurrence and movement of freshwater on Earth.CL2
2. Illustrate the occurrence of groundwater and its flow. CL2
3. Discuss water quality parameters and standards. CL2

Course Learning Outcome:

1. Measure the various components of the hydrological cycle. CL3
2. Recognize types of aquifers and infer groundwater flow direction. CL3
3. Prepare and interpret stream hydrographs. CL5
4. Assess groundwater quality. CL5

Month	Lectures From:	Lectures To:	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	19/06/2026	21/6/2026	3	Introduction			

	22/6/2026	28/6/2026		Scope of hydrogeology and its societal relevance Hydrological cycle and its components: precipitation, evaporation, transpiration Hydrological cycle and its components: precipitation, evaporation, transpiration		1. Davis, S.N. and De Weist, R.J.M. (1966). Hydrogeology, John Wiley & Sons Inc., N.Y. 2. Fetter, C.W. (2001). Applied Hydrogeology, Prentice Hall Inc., N.J., U.S.A. 3. Hiscock, K. M. (2005). Hydrogeology: Principles and practice. Blackwell Publishing
JULY	29/6/2026	5/7/2026		evapotranspiration, surface storage, overland flow infiltration, soil moisture, interflow, percolation groundwater recharge and storage, baseflow		

August			and surface runoff			
	6/7/2026	12/7/2026	groundwater recharge and storage, baseflow and surface runoff			
			nstruments for measurement of precipitation, evapotranspiration, infiltration and streamflow			
			instruments for measurement of precipitation, and			
	13/7/2026	19/7/2026	evapotranspiration,			
			infiltration			
	20/7/2026	26/7/2026	streamflow			
			Concepts of watershed			
			drainage network			
	27/7/2026	2/8/2026	drainage network			
			relation to surface runoff and infiltration			
			relation to surface runoff and infiltration			
	3/8/2026	9/8/2026	Subsurface water and groundwater			
			Subsurface water and groundwater			

			Rock properties affecting groundwater: porosity			
			Rock properties affecting groundwater: porosity			
			permeability and hydraulic conductivity			
			permeability and hydraulic conductivity			
	10/8/2026	16/8/2026				
			permeability and hydraulic conductivity			
			permeability and hydraulic conductivity			
	17/8/2026	23/8/2026	vertical distribution of groundwater, saturated and unsaturated zones			
			vertical distribution of groundwater, saturated and unsaturated zones			
			vertical distribution of groundwater, saturated and unsaturated zones			
	24/8/2026	30/8/2026	Types of geologic formations: Aquifer,			
			aquitard, aquiclude, aquifuge			

September				types of aquifers: unconfined, confined, perched, confining layers		
	31/8/2026	6/9/2026		types of aquifers: unconfined, confined, perched, confining layers		
				water table, piezometric head, anisotropy and heterogeneity of aquifers		
				Groundwater flow and Darcy's law,		
	7/9/2026	13/9/2026		water table, piezometric head, anisotropy and heterogeneity of aquifers		
				Aquifer parameters: specific retention, specific yield, transmissivity, storativity		
				Aquifer parameters: specific retention, specific yield, transmissivity, storativity		
	14/9/2026	20/9/2026		Ganesh Break		
				Ganesh Break		

October				Ganesh Break		
	21/9/2026	27/9/2026		Groundwater chemistry: Physical and chemical properties of groundwater		
				parameters of water quality; physical, chemical and biological		
				Groundwater chemistry: Physical and chemical properties of groundwater		
	28/9/2026	4/10/2026		major, minor, and trace constituents,		
				major, minor, and trace constituents,		
				ISI standards for drinking water		
	5/10/2026	11/10/2026		ISI standards for drinking water		
				Artificial groundwater recharge		
				Artificial groundwater recharge		
	12/10/2026	14/10/2026		Revision		
				Revision		

Assessment	Component	Max Marks
	ISA 1	7.5
	ISA 2	7.5

Rubrics

ISA 3	7.5
Project	-
Semester End Exam	60