1.	Title of the course	Groundwater Hydrology
2.	Course number	CE505L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CE5021/6
6.	To be offered by	Department of Civil and Environmental Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To equip the students with capabilities required to explain groundwater occurrences,aquifer classification and aquifer properties in the many different geological environments. Carrying out comprehensive hydrological flow systems analyses in groundwater systems. Performing detailed groundwater balances, interpreting and working with the concepts of groundwater recharge, storage,and discharge. Knowledge of the steady-state and transient groundwater flow processes and their physical description, and application of analytical solutions to solve the groundwater management problems.	
10.	**Course Content:** Introduction: Role of groundwater in the hydrologic cycle, problems and perspectives. Occurrence and movement of groundwater, hydrogeology of aquifers, Darcy's law, general flow equations. Groundwater and Well Hydraulics: steady and unsteady radial flows in aquifers, partially penetrating wells, characteristic well losses, specific capacity. Surface and Subsurface investigations of Groundwater: Geologic methods, remote sensing, geophysical exploration, electrical resistivity and seismic refraction, logging techniques. Water wells: methods of construction, yield tests, protection and rehabilitation of wells. Management of Groundwater: concepts of basin management, conjunctive use, mathematical modelling, artificial groundwater recharge: concepts, recharge methods, recharge mounds, induced recharge. Saline water intrusion in aquifers	
11.	**Textbook(s):** 1. Raghunath H M, *Ground Water*, New Age International Publishers (2007). 2. Todd D K, and Mays L W, *Groundwater Hydrology*, Wiley (2004).	
12.	**Reference(s):** 1. Schwarz F, Zhang H, Fundamentals of Ground Water, Wiley, (2002). 2. Fitts C, Groundwater Science, Academic Press, (2012). 3. Bear J, Hydraulics of Groundwater, Dover Publications, (2007)	