

GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (WATER RESOURCES ENGINEERING) (33)

GROUND WATER MANAGEMENT

SUBJECT CODE: 2723301

SEMESTER: II

Type of course: Ground water hydrology

Prerequisite: Fundamental knowledge of ground water hydrology, well hydraulics, ground water flow continuity equation, Darcy's law.

Rationale: Students will be able to understand flow of ground water through porous media, recharge of aquifer and sea water intrusion in coastal aquifers

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr.No	Topics	Teaching Hrs.	Module Weightage
1.	Availability of ground water, types of aquifers, ground water investigation methods, aquifer parameters and their determination, development of ground water.	12	30
2	Well hydraulics, types of wells, multiple well system, well design criteria, construction and maintenance.	12	30
3	Groundwater basin management and conjunctive use, artificial recharge of aquifers, methods of artificial recharge	8	20
4	Sea Water intrusion in coastal aquifers, methods of its prevention and control, Groundwater pollution remediation and legislation	6	10
5	Introduction to ground water flow and contaminant transport process	4	10

Reference Books:

1. Groundwater Resources Evaluation – W. C. Walton
2. Geohydrology – Roger Dewlest
3. Groundwater Hydrology – D. K. Todd
4. Numerical analysis by Analog and Digital models for seepage and groundwater flows- D.R.Ruston & S.C.Redshow

5. Groundwater – H. M. Raghunath
6. Numerical ground water hydrology—A.K.Rastogi

Course Outcome:

After learning the course the students should be able to: Understand basic of ground water flow and well hydraulics and design of the same.

List of Open Source Software/learning website:

<http://en.wikipedia.org/wiki/Groundwater>

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.