CIVIL ENGINEERING DEPARTMENT

Vishwakarma Govt. Engineering College Chandkheda, Ahmedabad 382424

Lesson Plan (Theory): 2020-21

Odd Semester Term Dates: 10/12/2020

Semester: VI	**WATER RESOURCES ENGINEERING AND HYDROLOGY**	**Sub Code: 3160610**
Prof G D Jagad	Lecture/week = 1	Lecture/sem = 14
Prof P P Lodha	Lecture/week = 2	Lecture/sem = 28
Prof B C Contractor	Lecture/week = 1	Lecture/sem = 14

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
4	0	2	5	70	20	10	30	0	20	150

Sr. No.	Chapter & Topics covered	Lecture No.	Faculty
1	MODULE – I Introduction :Hydrologic cycle, Climate and water availability	1	PPL
	Water balances, Precipitation: Forms, Classification, Variability, Measurement	2	
	Precipitation Measurement	3	
	Precipitation Data analysis	4	
	Examples Based on Precipitation Data analysis	5	
	Evaporation and its measurement,	6	
	Evapotranspiration and its measurement,	7	
	Penman Monteith method.	8	
	Infiltration: Factors affecting infiltration	9	
	Horton's equation	10	
	Infiltration Green Ampt method.	11	
	Examples based on Horton's equation	12	
	Examples based on gsreen ampt method	13	
2	MODULE – II **Runoff:** Drainage basin and watershed characteristics,	14	PPL
	Types of runoff, Surface, subsurface flow, base flow.	15	
	Hydrographic Analysis: Mass curve	16	
	Hyetograph	17	
	Hydrograph with types, assumptions	18	
	Rationale and limitations of unit hydrograph,	19	
	Derivation of unit hydrograph and its conversions,	20	
	S- hydrograph and its uses	21	
	Snyder's Hydrograph	22	
	Flow duration curve	23	
	Flow duration curve uses.	24	
	Examples of Unit hydrograph	25	

	Examples of s hydrograph	26	
	Examples of snyder's hydrograph	27	
	Examples of Mass curve	28	
3	**MODULE – III** Groundwater Hydrology: Occurrence, Darcy's law, Well hydraulics	1	BCC
	Well losses, Yield, Pumping and recuperation test.	2	
	Dams and Reservoirs: Types, Investigations, Site selection,	3	
	Zones and levels of storage in reservoir,	4	
	Safe and Design yield, Reservoir capacity,	5	
	Reservoir sedimentation and control, Bed load, suspended load.	6	
	Reservoir : Bed load, suspended load.	7	
	Types of dams, Selection of type and site of dam,	8	
	Information about major dams and reservoirs of India	9	
4	MODULE – IV **Floods:** Indian rivers and floods, Causes of floods	1	GDJ
	Alleviation and flood management, Levees and floodwalls, Floodways,	2	
	Channel improvement works, Flood damage analysis.	3	
	Flood Terminology and Hydrological Analysis: Design flood, Standard Project flood, Probable maximum flood,	4	
	Flood estimation, Frequency analysis, Flood routing through Reservoirs	5	
	Open channels, Muskingham Routing.	6	
	Hydel Power: Micro, Small, High generation plants, Low, Medium and High head plants	7	
	Power house components and Hydel schemes.	8	
5	**MODULE – V** **Drought Management and Water Harvesting:** Definition of drought, Causes and types of drought, measures for water conservation and augmentation	9	GDJ
	Drought contingency planning and execution.	10	
	Water harvesting: rainwater collection	11	
	Water harvesting: small dams	12	
	Water harvesting: runoff enhancement, runoff collection, ponds, tanks,	13	
	rooftop model of rainwater harvesting.	14	
	Water Resources Planning and Management: Requirement of Water Resources schemes,	10	BCC
	Principles and objectives of Water resources planning. Levels in planning,	11	
	Functional requirements of water resources projects	12	
	Steps in water resources planning,	13	
	Environmental aspects in water resources planning.	14	
	Total hours	56	

Mid Semester Exam Date:

Mid Semester Examination Syllabus

1. Module : I
2. Module : III
3. Module: IV

Faculty Coordinator HOD