



SWARNANDHRA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by
NAAC with "A" Grade – 3.32 CGPA Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF CIVIL ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
19CE5T03	WATER RESOURCES ENGINEERING	V	CIVIL	05	2021-22	04-10-2021
COURSE OUTCOMES						
1	Discuss the theories and principles governing the hydrologic processes. (K2)					
2	Estimate flood magnitude and carry out flood routing. (K2)					
3	Describe the design of diversion head works. (K2)					
4	Generalize planning of reservoirs and stability of the dams. (K2)					
5	Develop irrigation canals and canal network. (K3)					
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	Discuss the theories and principles governing the hydrologic processes. (K2)	1.1	Introduction. Engineering hydrology and its applications	T1,R1	1	Chalk & Talk, PPT, Tutorial
		1.2	Hydrologic cycle	T1,R1	1	
		1.3	Precipitation, Types and forms, measurement, rain gauge network	T1,R1	1	
		1.4	Presentation of rainfall data, average rainfall, continuity and consistency of rainfall data,	T1,R1	1	
		1.5	frequency of rainfall, Intensity-Duration-Frequency (IDF) curves,	T1,R2	1	
		1.6	Depth-Area-Duration (DAD) curves.	T1,R2	1	
		1.7	Evaporation, factors affecting,	T1,R1	1	
		1.8	measurement, reduction	T1,R1	1	
		1.9	Evapo-transpiration, factors affecting,	T2,R1	1	



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		1.10	Measurement, control. Infiltration	T2,R1	1			
		1.11	factors affecting, Infiltration capacity curve,	T2,R1	1			
		1.12	measurement, infiltration indices.	T2,R1	1			
		Total			12			
II	Estimate flood magnitude and carry out flood routing. (K2)	2.1	Runoff, Catchment characteristics, Factors affecting runoff,	T2,R1	1	Chalk & Talk, PPT, Tutorial		
		2.2	Computation by empirical formulae, tables and curves.	T2,R1	1			
		2.3	Components of hydrograph, Base flow separation,	T2,R2	1			
		2.4	Unit hydrograph, assumptions, limitation,	T2,R1	1			
		2.5	Derivation, application, S-hydrograph.	T2,R2	1			
		2.6	Floods, Causes and effects,	T2,R1	1			
				2.7	frequency analysis by Gumbel's	T1,R1	1	
				2.8	Log-Pearson type III distribution methods,	T1,R1	1	
				2.9	flood control methods and management	T1,R1	1	
				2.10	Hydrologic routing, channel and reservoir routing,	T1,R1	1	
				2.11	Muskingum	T1,R1	1	
				2.12	Pul's methods of routing.	T1,R1	1	
		Total			12			
III	Describe the design of diversion head works. (K2)	3.1	Irrigation, Necessity and Importance of Irrigation,	T2,R1	1	Chalk & Talk, PPT, Tutorial		
		3.2	advantages and ill effects of Irrigation, types of Irrigation,	T2,R1	1			
		3.3	methods of application of Irrigation water, standards of quality for Irrigation water,	T1,R2	1			
		3.4	Principal crops and crop seasons, crop rotation.	T2,R2	1			
		3.5	Design of erodible canals by Kennedy's silt theory and Lacey's regime theory.	T1,R2	1			
		3.6	Diversion Head works, Types	T2,R1	1			



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			of Diversion head works,			
		3.7	weirs and barrages,	T1,R2	1	
		3.8	layout of diversion head works,	T1,R1	1	
		3.9	Components. Causes and failure of weirs on permeable foundations,	T1,R1	1	
		3.10	Bligh's creep theory, Khosla's theory,	T1,R1	1	
		3.11	of impervious floors for subsurface flow,	T1,R1	1	
		3.12	exit gradient	T1,R1	1	
				Total	12	
IV	Generalize planning of reservoirs and stability of the dams. (K2)	4.1	Reservoir planning, Investigations	T2,R1	1	Chalk & Talk, PPT, Tutorial
		4.2	selection, zones of storage,	T2,R1	1	
		4.3	yield and storage capacity of reservoir,	T1,R2	1	
		4.4	reservoir sedimentation.	T2,R1	1	
		4.5	Dams, Types of dams, selection of type of dam,	T1,R2	1	
		4.6	Selection of site for a dam.	T2,R1	1	
		4.7	Gravity dams, Forces acting on a gravity dam,	T1,R1	1	
		4.8	causes of failure of a gravity dam, elementary profile and practical profile of a gravity dam,	T1,R1	1	
		4.9	Limiting height of a dam, stability analysis.	T1,R1	1	
		4.10	Earth dams, Types, causes of failure,	T1,R1	1	
		4.11	criteria for safe design, seepage,	T1,R1	1	
		4.12	measures for control of seepage-filters,	T1,R1	1	
				Total	12	
V	Develop irrigation canals and canal	5.1	Spillways, Types,	T2,R1	1	Chalk & Talk, PPT, Tutorial
		5.2	design principles of Ogee spillways,	T2,R1	1	
		5.3	types of spillway crest gates	T2,R1	1	
		5.4	Falls, Types and their location,	T1,R2	1	



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network. (K3)	5.5	design principles of straight glacis fall.	T1,R1	1	
	5.6	Regulators, Head and cross regulators,	T2,R1	1	
	5.7	design principles	T2,R1	1	
	5.8	Canal outlets, types, proportionality,	T1,R2	1	
	5.9	Sensitivity and flexibility.	T1,R2	1	
	5.10	Cross Drainage works, Types,	T1,R2	1	
	5.11	selection,	T1,R2	1	
	5.12	Design principles of aqueduct.	T1,R2	1	
Total				12	
CUMULATIVE PROPOSED PERIODS				60	

Text Books:

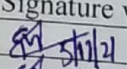
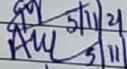
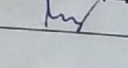

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Subramanya.K, Engineering Hydrology, 3 rd Edition, Tata McGraw Hill, 2016
2	Jayarami Reddy.P, Hydrology, 1 st edition, Tata McGraw Hill, 2015

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Vijay P.Singh, Elementary Hydrology, 1 st Edition, Prentice Hall of India, 2016
2	Ven Te. Chow, Maidment D.R. and Mays L.W, Applied Hydrology, McGraw Hill International Book Company. New York, 2015

Web Details

1	https://nptel.ac.in/courses/105104103/
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	Name	Signature with Date
i. Faculty	G.VENKATA RAMANA	 5/11/21
ii. Course Coordinator	G.VENKATA RAMANA	 5/11/21
iii. Module Coordinator	A.VENKATA KRISHNA	 5/11/21
iv. Programme Coordinator	G V L N MURTHY	 5/11/21


Principal