COURSE MODULES OF THE SUBJECT TAUGHT FOR THE SESSION FEB- MAY 2024-25(EVENSEM)

Course Syllabus with CO's

Faculty Name: **AKHILA C G**			Academic Year: 2024-25				
Department: Civil Engineering							
Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours			Total Hrs./Sessions
				L	T	P	
BCV602	**Irrigation Engineering and Hydraulics**	Core	**Knowledge of Engineering Mechanics.**	**03**	**02**	**-**	**50**
Objectives	1. Analyse and design gravity dam 2. Find the cross section of earth dam and estimate the seepage loss 3. Design spillways and apron for diversion work 4. Design CD works and chose appropriate canal regulation works						

Topics Covered as per Syllabus

MODULE 1:

Irrigation: Definition. Benefits and ill effects of irrigation. System of irrigation: surface and ground water, flow irrigation, lift irrigation, Bandhara irrigation. Water Requirements of Crops: Duty, delta and base period, relationship between them, factors affecting duty of water crops and crop seasons in India, irrigation efficiency, frequency of irrigation.

MODULE 2:

Canals: Types of canals. Alignment of canals. Definition of gross command area, cultural command area, intensity of irrigation, time factor, crop factor. Unlined and lined canals. Standard sections. Design of canals by Lacey's and Kennedy's method. Reservoirs: Definition, investigation for reservoir site, storage zones determination of storage capacity using mass curves, economical height of dam.

MODULE 3:

Gravity dams:

Forces acting on a gravity dam, causes of failure of a gravity dam, elementary profile, and practical profile of a gravity dam, limiting height of a low gravity dam, Factors of Safety – Stability Analysis, Foundation for a Gravity Dam, drainage and inspection galleries.

MODULE 4:

Earth dams:

Types of Earth dams, causes of failure of earth dam, criteria for safe design of earth dam, seepage through earth dam-graphical method, measures for control of seepage. Spillways: types of spillways, Design principles of Ogee spillways – Spillway gates. Energy Dissipaters and Stilling Basins Significance of Jump Height Curve and Tail Water Rating Curve – USBR and Indian types of Stilling Basins.

MODULE 5:

Diversion Head works:

Types of Diversion head works- weirs and barrages, layout of diversion head work – components. Causes and failure of Weirs and Barrages on permeable foundations, -Silt Ejectors and Silt Excluders, Weirs on Permeable Foundations – Creep Theories – Bligh's, Lane's and Khosla's theories, Determination of uplift pressure- Various Correction Factors – Design principles of weirs on permeable foundations using Creep theories – exit gradient, U/s and D/s Sheet Piles – Launching Apron.

List of Text Books
Irrigation Engineering and Hydraulic structures by Santhosh kumar Garg, Khanna Publishers Irrigation engineering by K. R. Arora Standard Publishers. Irrigation and water power engineering by Punmia & Lal, Laxmi publications Pvt. Ltd., New Delhi Theory and Design of Hydraulic structures by Varshney, Gupta & Gupta Irrigation Engineering by R.K. Sharma and T.K. Sharma, S. Chand Publishers 2015. Irrigation Theory and Practice by A. M. Micheal Vikas Publishing House 2015. Irrigation and water resources engineering by G.L. Asawa, New Age International Publishers.

The Correlation of Course Outcomes (CO's) and Program Specific Outcomes (PSO's)

List of URLs, Text Books, Notes, Multimedia Content, etc	
https://searchworks.stanford.edu/view/10496310 https://searchworks.stanford.edu/view/13576277 https://searchworks.stanford.edu/view/11842972	
Course Outcomes	At the end of the course, the student will be able to : 1. Know types of water retaining structures for multiple purposes and its key parameters considered for planning and designing 2. Understand details in any Irrigation System and its requirements 3. Analyse and Design of a irrigation system components
Internal Assessment Marks:25marks (3SessionTests are conducted during the semester and marks allotted based on average of 2bestperformances) + 25 Marks Assignment	

Subject Code:	**BCV602**	**TITLE: Irrigation Engineering and Hydraulics**						**Faculty Name:**		**AKHILA C G**		
List of Course Outcomes	**Program Outcomes**											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**Total**
CO-1	3	1	-	-	-	2	1	-	-	-	-	1	8
CO-2	3	1	-	-	-	2	1	-	-	-	-	1	8
CO-3	3	1	-	-	-	2	1	-	-	-	-	1	8
Total	12	3				6	3					3	**27**

Note: 3=Strong Contribution 2=Average Contribution 1 =Weak Contribution 0 =No Contribution

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List of Course Outcomes	**Program Specific Outcomes**		
	PSO1	**PSO2**	**Total**
CO-1	1	-	1
CO-2	1	-	1
CO-3	1	-	1
CO-4	1	-	1
CO-5	1	-	1
Total	5	-	5