शासकीय पॉलीटेक्निक गरियाबंद

Subject : WRE

Semester : 5th

Session : July - Dec 2024

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GOVERNMENT POLYTECHNIC GARIYABAND
DEPARTMENT OF CIVIL ENGINEERING
LESSON PLAN

- Session:- July-Dec 2024
- Session start date as per University Calendar:
- Subject Name:- **Water Resource Engineering**
- Name of Subject Teacher:- Nagendra Patel
- Course Code:- 2020573(020)
- Lecture plus Tutorial/Week:- 03

Lecture No.	No. & Name of chapter	Topic/Subtopics to be covered under this unit	No. of period planned	Planned Date	Execution Date	Remarks
01	UNIT-01 Hydrology	Definition, Hydrological cycle	01	22/08/24	29/08/24	
02		the water budget equation, catchment area	01	23/08/24	30/08/24	
03		Precipitation, forms of precipitation , measurement of rainfall,	01	29/08/24	05/09/24	
04		rain gauge and types, rain gauge density as per IS and WMO, computation of average rainfall over a basin, mean annual rainfall	01	30/08/24	12/09/24	
05		Losses from precipitation, Evaporation, infiltration	01	02/09/24	13/09/24	
06		Runoff, factor affecting run off, computation of runoff.	01	05/09/24	19/09/24	
07		Hydrograph, unit hydrograph, peak flow determination	01	09/09/24	20/09/24	
08-09		Stream flow measurement– area velocity method, weir method, stage discharge curve	02	12/09/24 13/09/24	23/09/24 26/09/24	

Detailed Teaching Plan

10	Unit-2	Definition, necessity, advantages, disadvantages, types of irrigation	01	16/09/24	27/09/24	
11		Methods of irrigation surface, subsurface sprinkler and drip irrigation.	01	19/09/24	30/09/24 03/10/24	
12		Water requirements of crops functions and quality of irrigation water,	01	20/09/24	04/10/24	
13		crop period/ base period, duty, delta, Importance of duty, factors on which duty depends, delta and duty for certain crops	01	23/09/24	14/10/24 17/10/24	
14		measures for improving duty	01	26/09/24	18/10/24	
	UNIT-02 Water requirement of crops	between duty and delta, and numerical problems, principal crops and crop seasons, important terms			21/10/24	
15		Functions of irrigation water, classes and availability of soil water, soil moisture constants, limiting soil moisture conditions	01	27/09/24	24/10/24	
16		Consumptive use of water, estimating depth and frequency of irrigation on the basis of soil moisture regime concept	01	30/09/24	04/11/24	
17		irrigation efficiencies, crop rotation, assessment of irrigation water,	01	3/10/24	08/11/24	
18		Water logging: cause and control	01	4/10/24	11/11/24	
19	Unit-03 Reservoir Planning	Purposes of reservoir, classification of reservoir based on purpose	01	7/10/24	14/11/24	
20-21		investigationforreservoir planning, Engineering surveys, area elevation curve, storage elevation curve	02	14/10/24 17/10/24	18/11/24 20/11/24	
22		Geological investigation, Hydrological investigation,	01	18/10/24	26/11/24	
23		factors affecting selection of site for a reservoir	01	21/10/24	28/11/24	
24		Zones of storages and various water levels, storage capacity and yield of reservoir	01	24/10/24	28/11/24	
25-26		various types of dam, factors governing the selection of type of dam, factors for selection of site for a dam	02	25/10/24	29/11/24	
27-28		Comparison of earthen and gravity dams with respect to foundation, seepage, construction and maintenance	02	28/10/24 04/11/24	2/12/24 5/12/24	
29		Earthen Dams – Types of earth dam, causes of failure of earthen dams, criteria for safe design of earth dam section of an earth dam	01	08/11/24	06/12/24	
30		components and their function, seepage, control of seepage through embankment and foundation,	01	11/11/24	12/12/24	
31		Construction of earth dam, equipments used in construction of earth dam,	01	14/11/24	12/12/24	
32		Gravity Dams- identification and definition of forces acting on a gravity	01	18/11/24	16/12/24	

Detailed Teaching Plan

Lecture No.	Unit No.	Topics to be covered	Planned Date	Excution Date	Remarks
33	Unit-04 Dam and spillway	modes of failure and criteria for structural stability of gravity dam	01	21/11/24	16/12/24	
34-35		elementary and practical profile, typical cross section, drainage gallery, joints in gravity dam,	02	22/11/24 25/11/24		
36		control of cracking in concrete dams, construction of gravity dam	01	28/11/24		
37		Spillways-Definition, function, location, straight drop spillway, ogee spillway, side channel spillway	01	29/11/24		
38		trough spillway, conduit spillway, shaft spillway, siphon spillway, spillway crest gates,	01	02/12/24		
39	Unit-05 Diversion Headworks and Canal Irrigation System	diversion headworks, weir, barrage component parts of a diversion headworks	01	05/12/24		
40		diversion weir and its types, location of diversion headwork's	01	06/12/24		
41		causes of failure of weirs and its remedy	01	09/12/24		
42		types of regulation at head regulator, silt control at headwork's	01	12/12/24		
43		classification of canals, alignment of canals, general considerations for alignment,	01	13/12/24		
44		Schedule of area statistics, cross section of canal, maintenance of irrigation channels,	01	16/12/24		
45		water logging-causes, ill effects and remedial measure, canal losses, canal lining –necessity and advantages,	01	19/12/24		
46		**Canal Outlets** – requirements of canal outlets, types of outlets, non-modular pipe outlet, flexible pipe outlet, Gibb's rigid module	01	20/12/24		
47		**Canal Regulation Works** - canal regulation works, canal falls-necessity and location, head regulators and cross regulators, canal escapes	01	23/12/24		
48		**Cross Drainage Works**- Types of cross drainage works, selection of type of cross drainage work,	01	30/12/24		
		aqueduct and siphon aqueduct				
		Total	48			

Signature of Teacher

HOD