Course Plan CE-1874 Irrigation and Design of Hydraulic structure Dr Pradeep Purohit

Unit	Description	Co/Po	Hours
I Irrigation water requirement and soil-water-crop relationship:	**Irrigation, definition, necessity, advantages and disadvantages,**	Co1/Po1 Co2/Po2 Co3/Po3	1
	Disadvantages, types and methods. Irrigation development.		1
	Soils - types and their occurrence, suitability for irrigation purposes,		1
	Wilting coefficient and field capacity, optimum water supply, consumptive use and its determination.		1
	Irrigation methods-surface and subsurface, sprinkler and drip irrigation.		2
	Duty of water, factors affecting duty and methods to improve duty, suitability of water for irrigation,		1
	Crops and crop seasons, principal crops and their water requirement,		1
	Crop ratio and crop rotation, intensity of irrigation.		1 Total 8
II Gravity dams:	**Design Criteria, forces acting on gravity dams,**	Co1/Po1 Co2/Po2 Co3/Po3	1
	Elementary profile,		1
	Low and high gravity dams,		1
	Stability analysis, evaluation of profile by method of zoning,		1
	Practical Profile,		1
	Foundation treatment, construction joints,		2
	Galleries in gravity dams.		1 Total -8
III Earth Dams:	Types, causes of failure and design criteria, soils suitable for earth dam construction,	Co1/Po1 Co2/Po2 Co3/Po3	1
	Construction methods, foundation requirements,		1
	Typical earth dam sections,		1
	Estimation of seepage through and below the dam,		2
	Seepage control, stability of slopes by slip circle method of analysis, pore pressures, sudden draw down, steady seepage and construction pore pressure condition.		2
	Rock fill dams: Types, merits and demerits, conditions favorable for their adoption.		1 Total-8
IV Spillways	Ogee spillway and its design,	Co1/Po1 Co2/Po2 Co3/Po3	1
	Details of syphon, shaft, chute and side channel spillways, emergency spillways.		2
	Energy dissipators and gates : Principles of energy dissipation Energy dissipators based on tail water rating curve and jump height curves		2
	Spillway crest gates - vertical lift and radial gates, their design principles and details. Design of canal regulating structures, Detail design of Sarda Falls, design of cross drainage works, syphon aquaduct..		3 Total- 8
V Hydropower Plants:	Introduction of Hydropower development, assessment of power potential,	Co1/Po1 Co2/Po2 Co3/Po3	1
	Types of hydropower plants,		1
	General features of hydro-electric schemes,		1
	Selection of turbines, draft tubes, surge tanks, penstocks,		2
	Power house dimensions, development of micro hydel stations.		2
	Tidal plants, pumped storage plants and their details.		1 Total-8