GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC SEMESTER : VI
CIVIL ENGINEERING

Subject Name: **IRRIGATION ENGINEERING**

Sr. No.	Course Contents
1.	**General:** Introduction, definition, necessity of irrigation, scope and benefits, ill effects of irrigation, irrigation development in India.
2.	**Methods of Irrigation:** Introduction, comparison of various irrigation methods viz. farm flooding, lift drip, sprinkler, micro irrigation methods like subsurface pitcher irrigation etc., irrigation rates, riparian rights, principles of assessing water rates.
3.	**Irrigation Water:** Soil, crops and water requirements of crops. Duty and delta. Assessment of irrigation water. Methods of applying water to crops, water logging problems, causes and remedial measures.
4.	**Diversion Works:** Introduction, types of diversion head work, causes of failure, Bligh's , Lane's and Khosla's theory, design of glacis weir, design of vertical weir, silt control devices, Appurtenances – fish ladder, divide wall, under & scouring sluices, canal head regulator.
5.	**Earthen Dams:** Types of earthen dams, details, causes of failure of earth dam, seepage line, flow net, stability analysis of slopes, seepage control, safety against piping, slope protections, design considerations in earthquake region, measures of safe drainage.
6.	**Gravity Dams:** Introduction, forces acting on dam, load combination for design, various stresses at any horizontal plane, middle third rule, failures of dam, stability requirements, elementary and practical profiles of dam, openings in dam, foundation treatment, spillway, capacity of spillway, components, types, factors affecting design, design criteria, energy dissipation on d/s side of spillway, stilling basins, bucket type dissipaters, spillway gates.
7.	**Canals :** Alignment and types of canals, design consideration, Lacey's & Kennedy's theories, canal lining, canal losses and maintenance, canal regulators, falls, escapes, outlet, constructional features, CD works, Aqueducts, super passages, syphon, level crossing with principles of hydraulic design.

Term Work:

Nil

Field Visit:

Field visits based on course content are suggested.

Reference Books:

1. Irrigation & Water Power Engineering - Dr. B.C.Punmia & B.B.Pande
2. Irrigation, Water Resources & Water Power Engineering - Dr. P.N.Modi
3. Irrigation, Water Power & Water Resources Engineering - Dr. K.R.Arora
4. Irrigation and Hydraulic Structures - S.K.Garg