RCETCEAC02 - Irrigation and Hydraulic Structures

Course outcomes:

- Assess the irrigation needs of crops
- Design gravity dam and earthen dam
- select and design canal fall

Syllabus:

UNIT I

Irrigation - necessity - Types of irrigation - Methods of supplying water - Assessment of irrigation water - Consumptive use and its determination - water requirement of various crops - Duty - Delta - Base period and crop period.

UNIT II

Functions and components of a diversion head work - Function - selection of site - type of weirs on pervious foundations - cause of failure - Bligh's creep theory and Khosla's theory - complete design of a vertical drop weir. Gravity dams - Non overflow section - forces acting - stability rules - elementary profile - Low and High dams - drainage gallery - Construction joints - Earthen dams - stability of slopes by slip circle method - seepage analysis and its control Types of canals - canal alignment - Kennedy's silt theory - Lacey's silt theory

UNIT III

Design of canals using the above theories - economical depth of cutting - canal losses - canal maintenance - lined canals and their design - silt control measures. Canal falls - Necessity and location - Design of sand type fall - design of a cross regulator - cross drainage works - selection of suitable type of cross drainage work - canal outlets.

Reference Text Books:

1. Water Resources Engineering by R.K. Linsley & J.L.H. Paulhus, McGraw Hill.
2. Hydroelectric Handbooks by W.P. Creager & J.D. Justin, John Wiley & Sons.