

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

## Water Resources Management

Subject Name Design of Hydraulic Structure

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| Sr.No | Course content   |
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| 1     | Investigation for dam-site<br>Different types of dams, selection of type of dams, Gravity Dams, criteria for stability analysis, design of Gravity dams by different methods, Foundation treatment and construction of gravity dams, Stress concentration at a gallery in gravity dams, design of penstocks and intake structures. |
| 2.    | Design of Earth dams,<br>Determination of Earthen dam section to suite available materials and foundation conditions, seepage through earthen dam, methods of controlling seepage, criteria for safe design of earthen dam, Criteria for design of filters, Relief wells, Stability of earthen dams.                               |
| 3     | Design of spillway and energy dissipation works.   |

### List of Tutorial:

1. Classification of dam
2. Forces acting on gravity dam as per IS-6512
3. Stability analysis of gravity dam
4. Design of Gravity dam
5. Design of Spillway
6. Preliminary section of earth dam and design of earth dam
7. Filter design for earth dam
8. Stability of earth dam
9. Location of phreatic line in earth dam section with horizontal filter and without filter

### Reference Books:

- 1 Design text books in Civil Engineering -Serge Leliavsky.
- 2 C.B.I. Publication No.12 of Government of India
- 3 Irrigation Engineering - Bharatsingh
- 4 Relevant Indian standards
- 5 Irrigation Water Resources - Dr.P.N.Modi
- 6 Irrigation – Dr. B. C. Punamia
- 7 Irrigation and Hydraulic Structures – S. K. Garg
- 8 Theory and Design of Hydraulic Structures – Varshney & Gupta
- 9 Water Resources Engineering- Larry Mays
- 10 Hydraulic Structure -Novak
- 11 Irrigation Engineering -Asawa