



National Programme on Earthquake Engineering Education

SEISMIC SAFETY ANALYSIS OF EMBANKMENT AND CONCRETE GRAVITY DAMS 22-26 December 2006, IIT Roorkee

Objective of course: Capacity building for seismic analysis and design of embankment and concrete gravity dams.

Course Contents:

Engineering Seismology

- Elements of Seismology
- Characteristics of Strong ground motion
- Sesimotectonics and Seismic Zoning
- Attenuation relationship
- Earthquake Design Parameters
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Dynamics of Vibrating Systems

- Single and Multiple Degree of Freedom Systems
- Continuous systems
- Basics of Finite Element method
- Evaluation of Seismic response, Response spectra, Site Specific design response spectra, Direct step by step integration

Design of Dams

- Design Philosophy and Considerations
- IS Code and ICOLD Provisions

Concrete Dams

- Observed Performance and Damage to Concrete Dams
- 2D and 3D FE Idealization of Continuum
- Stress Analysis of Concrete Dams
- Simplified Method of Dynamic Analysis
- Dam-Reservoir-Foundation Interaction
- A Case Study of Seismic Response of a Dam
- Linear Elastic Analysis using software COSMOS/M, ANSYS
- Nonlinear analysis of Concrete dams

Embankment Dams

- Observed Performance of Embankment Dams
- Embankment Stability during Earthquakes

- 1D and 2D Idealization Embankment Dams
- Analysis of Permanent Displacement
- Assessment of Liquefaction Potential in an embankment Dam
- Nonlinear Analysis of embankment Dams
- 3D Analysis of Dams
- A Case Study of Embankment Dam
- Software Packages for Finite Element Analysis

General

- Capacity evaluation due to Sedimentation
- Problems Associated with Dam Foundation
- Stability of Reservoir Rim
- Dam burst analysis
- Dam foundation Seepage
- Water quality
- Seismic Instrumentation of dam

Target Trainees: Faculty of Engineering Colleges and a few practicing engineers.

Duration of Course: Two week (Dec.22-29, 2006)

Resource Faculty: Faculty of the Department of Engineering Earthquake Engineering, IIT Roorkee and invited speakers.

Course coordinators:

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