Design and Construction of Earthen Dams

Code	Credit Hours
CE-837	3-0

Course Description:
The course aims to give students in-depth knowledge of earthen dam construction and design. With the help of theoretical and numerical approaches, the students are taught the subject with emphasis on seepage control, dam design, instrumentation and particular problems in the field

Textbooks:
1. Design of Small Dams (1987). United States Department of the Interior, Bureau of Reclamation, A Water Resource Technical Publication.
2. EM 1110-2-2300 (2004). General Design and Construction Considerations for Earth and Rock-Fill Dams.
3. Fell et al. (2005). Geotechnical Engineering of Dams. CRC press, Florida, USA.
4. Kutzner, C. (2018). Earth and Rockfill Dams: Principles for Design and Construction. Routledge, London, UK.

References
5. Duncan, J. M., and Wright, S. G. (2005). Soil Strength and Slope Stability, John Wiley & Sons, PA, USA.
6. Abramson et al. (2001). Slope Stability and Stabilization Methods, John Wiley & Sons, PA, USA.
7. Landslides; Analysis and Control, Transportation Research Board Special Report 176 National Academy of Sciences.

Prerequisites
Nil

Assessment system for theory

Quizzes	10-15%
Assignments	5-10%
Mid Terms	25-30%
Project	0-10%
ESE	45-50%

Teaching plan

Weak No.	Topics	Learning outcomes
1	Introduction	General Aspects of the Course with Covered Topics
2-3	Types of Dams	Components, Classification based on Materials, Purposes and Shape
4	Dam Design	General Dam Design Criteria
5-8	Seepage	Theoretical Aspects of Seepage, Seepage Forces, Control of Seepage through Embankments, Control of Seepage through Foundations

9	**MID TERM EXAMS**	
10-11	Dams Failures	Aspects of Hydraulic, structural and Seepage failures
12-14	Stability Analysis	Classical and Advanced Methods: Felenius Solution, Modified Bishop Method, etc.,
15-17	Instrumentation and Quality Control Measures	Quality Control Measures, Instrumentation, Requirement for Selection of Instruments for Monitoring, Purpose of Instrumentation and Monitoring, Instrumentation and Monitoring for the Assessment of Dam Body, Selection of Instruments
18	**END SEMESTER EXAMS**	