

Course Code: ME868

Course Title: Pipe Networks

Credit Hours: 3

Course Description

This course is a survey of principal concepts and methods of Pipe Network. Topics include Introduction - Review of Fundamentals - Manifold Flow - Pipe Network Analysis - Design of Pipe Networks – Open and Closed Loops - Extended Time Simulations - Introduction to Transient Flow - Elastic Theory of Hydraulic Transient (Water Hammer) - Solution by Methods and Characteristics - Pipe System Transients - Pumps in Pipe Systems.

Course Objectives

- Presenting recent developments in the area of Pipe Networks and Reservoir.
- Introduces students to Pipe Networks, Transient Flow, and Pipe System Transients.

Course Topics

Week No.1: Introduction.
Week No.2: Review of Fundamentals.
Week No.3: Manifold Flow.
Week No.4: Pipe Network Analysis.
Week No.5: Design of Pipe Networks.
Week No.6: Extended Time Simulations.
Week No.7: Introduction to Transient Flow
Week No.8: Introduction to Transient Flow (Cont.).
Week No.9: Elastic Theory of Hydraulic Transient (Water Hammer).
Week No.10: Solution by Methods and Characteristics.
Week No.11: Solution by Methods and Characteristics (Cont.).
Week No.12: Pipe System Transients.
Week No.13: Pipe System Transients (Cont.).
Week No.14: Pumps in Pipe Systems.
Week No.15: Pumps in Pipe Systems (Cont.).

References

- Larock, B.E., Jeppson, R.W., Watters, G.Z., “Hydraulic of Pipeline System”, Boca Raton London New York Washington, D.C, ISBN 0-8493-1806-8 , Latest edition.
- Swamee, P.K., Sharma, A.K., “Design of Water Supply Pipe Networks”, ISBN: 9780470178522, Latest edition.
- R.W., Jeppson, “Analysis of Flow in Pipe Networks”, 1st edition, ISBN-13: 9780250401192, ISBN:0250401193, Latest edition.