

5	Pipeline Pigging	Introduction of Pigs, Types of Pigs, pig launchers, Smart pigs/Intelligent pig, Plugs.	5
6	Corrosion protection	Causes, Types, Protection: coating, cathodic protection, Internal corrosion, Corrosion Monitoring and control.	5
Total			36

4. Readings

4.1 Textbooks:

1. Pipeline Rules of thumb Handbook, E.W. McAllister, Gulf Professional Publishing
2. Pipeline & risers : Young Boi ,Elsevier Ocean Engineering Book series 2001 Volume
3. Piping Handbook, MohinderL.Nayyar, McGraw Hill
- 4.NACE Corrosion Engineer's Reference Book, Robert Baboian, NACE International

5. Outcome of the Course:

- 1) Identify pressure distribution system in Natural Gas Pipelines i.e.low-pressure medium pressure and high-pressure system.
- 2) Design of City Gas Distribution Network i.e.Primary Network, Secondary Network and Distribution Network
- 3) Evaluate methods of Pipeline Network Analysis i.e.Hardy Cross Methods, Newton Loop Method.
- 4) Analyze graph theory applicable for Network Analysis
- 5) Examine steady state & unsteady state analysis for gas pipelines