

PIPING SYSTEM DESIGN–EL 2
Semester III (Production Engineering)
SUB CODE: MEPR303-E
Teaching Scheme (Credits and Hours)

Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
L	T	P	Total		THEORY		IE	CIA	PR. / VIVO	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
3	0	0	3	3	3	70	30	20	0	120

LEARNING OBJECTIVES:

The objective of this course is

- To learn various concepts related to piping.
- To get acquainted with piping design.

LESSON PLANNING

SR.NO	CHAPTER NO	DATE/WEEK	%WEIGTAGE
1	1,2	1 st 2 nd 3 rd	20
2	3,4	4 th 5 th 6 th	20
3	5,6	7 th 8 th 9 th	20
4	7	10 th 11 th 12 th	20
5	8	13 th 14 th 15 th	20

Total hours (Theory): 45, Total hours (Practical):00, Total hours: 45

DETAILED SYLLABUS

Chap . No.	Topic
1	Introduction to piping engineering
2	Codes & standards for piping engineering & design
3	Piping elements viz. pipes, fittings, flanges, gaskets, bolting, valves etc. Types of valves
4	Piping drawing layout and instruments diagram, Equipment layout Basic of flow through pipes
5	Pipe sizing & piping hydraulics Head sizing & piping hydraulics
6	Head losses due to contraction and expansion, other types of losses Network analysis, Overall loss estimation through network analysis, optimizing piping network with respect to losses
7	Design of liquid handling piping system, sizing for equal velocity, sizing for equal areas, optimal sizing, water hammer, Steam piping design, stream traps
8	Flexibility analysis consideration for cryogenic piping Selection of support & expansion joints Instrumentation, Introduction to CAESER

INSTRUCTIONAL METHOD AND PEDAGOGY (Continuous Internal Assessment (CIA) Scheme)

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all units while conducting teaching & examination.
- Attendance is compulsory in lectures and Tutorial.

- Viva Voce will be conducted at the end of the semester of 30 Marks.
- One internal exam of 30 marks is conducted as a part of Mid semester evaluation.

STUDENTS LEARNING OUTCOMES:

At the end of the course

The students will gain an experience in applying the piping design procedure for the industrial applications.

Reference:

1. M.V.Joshi & V.V. Mahajani, "Process Equipment Design", MacMillan, India Ltd., 1996.
2. J.F.Hanvey, "Pressure Vessels Design", Von Nostrand Co. Ind., 1963
3. ASME code Section 8th div 1, div 2
4. K.P.Singh & A.L. Soler, "Mechanical Design of Heat Exchangers", Arcturus Pub. Inc. N.J. 08003, USA. 1984
5. Demis R. Moss, Pressure Vessel Design Manual, Gulf Publishing Co., Houston, 1987.
6. IS 2825
7. Sahu G.K., "Hand Book of Piping Design", New Age International (P) Ltd. 1998,
8. ASHRAE fundamentals – 1985.

