AMCH13 CHEMICAL EQUIPMENT DESIGN

UNIT-1 DESIGN PRELIMINARIES

1.1 Design codes,
1.2 Design Pressure & Temperature,
1.3 Design stress and Factor of safety,
1.4 Design wall thickness and minimum thickness, corrosion allowance,
1.5 Design loadings.

UNIT-2 DESIGN OF SPHERICAL AND CYLINDRICAL VESSELS

2.1 Thin wall vessels,
2.2 Derivation of Design equations,
2.3 Design problems.

UNIT-3 DESIGN OF HEADS AND CLOSURES

3.1 Types of heads,
3.2 Analysis & design of the different types of heads,
3.3 Design problems.

UNIT-4 COMPENSATION FOR OPENINGS IN PRICESS EQUIPMENTS

4.1 Types of compensation,
4.2 Theoretical determination of stress patterns around openings,
4.3 Design problems uncompensated openings, compensation for multiple openings.

UNIT-5 DESIGN OF NON STANDARD FLANGES

5.1 Classification of flanges,
5.2 Gasket & its selection, selection of Bolt spacing,
5.3 Bolt materials, Flange calculations,
5.4 Flanges subjected to external pressure.

UNIT-6 DESIGN OF TALL VESSELS

6.1 Stresses in the shell,
6.2 Determination of equivalent stress under combined loadings,
6.3 Determination of longitudinal stresses, Determination of Resultant longitudinal stresses.

UNIT-7 DESIGN OF SUPPORT FOR PROCESS VESSELS

7.1 Design of skirt support, Design problem,
7.2 Design of saddle support, Design of saddles,
7.3 Design of Bracket Support, Design problems.

Reference Books

1. Introduction to Chemical Equipment Design: Mechanical Aspects by Bhattacharyya
2. Joshi's Process Equipment Design by V V Mahajani and S B Umarji