

UG Department: **Chemical Engineering**
Course Code: **CH309** Course Name: **Process Equipment Design**
Credit: **3** L-T-P: **3-0-0**
Version: **1** Approved on:
Prerequisite Course: **Heat Transfer, Mass Transfer-I, Mass Transfer-II**

Heat Exchangers: Auxiliary calculations; Review of Kern method; Bell's method and HTRI method of Shell-and-tube heat exchanger design; Plate heat exchanger design; Finned tube heat exchanger; Optimization of shell-and-tube heat exchanger.

Reboilers: Design of kettle and thermosyphon reboilers.

Evaporators: Design of single and multi-effect evaporators.

Agitated Vessels: Design of mixing vessels, gas-spraying systems; impellers, propellers, anchors and helical ribbon-type agitators.

Gas-Liquid Contact Systems: Distillation column, Absorption tower, tray hydraulics of sieve and valve trays; Design of packed bed columns.

Books

1. Sinnott, R.K., "Coulson and Richardson's *Chemical Engineering*," Vol. 6, 3rd ed., Butterworth Heinmann, New Delhi, 2002.
2. Kern, D. Q., "*Process Heat Transfer*," McGraw-Hill, 1950.
3. Evans, F. L., "*Equipment Design Handbook*," 2nd ed., Vol. 2, Gulf Publishing, 1980.
4. Smith, B. D., "*Design of Equilibrium Stage Processes*," McGraw-Hill, 1963.