SUBJECT NO-CH21004, SUBJECT NAME- HEAT TRANSFER

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Mechanisms of heat flow - conduction, convection, and radiation.Conduction- Steady and unsteady state one, two and three dimensional conduction equations in different geometries.Convection-Dimensional analysis, forced and natural convection.Radiation-Stefan Boltzman law, Kirchoff s Law, and their applications, black body, grey body, exchange of radiant heat between grey bodies.Furnaces, flame temperature, optimum thickness of insulation.Heat exchangers- Classification and design, metallic and non-metallic heat exchangers.Evaporators-Types and design features.Design of natural and forced circulation reboilers- optimization of heat exchanger design; heat exchanger performance evaluation.Process design and performance evaluation of Double Pipe, Shell and Tube, Plate, Spiral Heat Exchangers; Process design data sheets.Heat pumps.Text Book:1.Process Heat Transfer by D. Q. Kern2.Heat Transfer by J. P. Holman3.Unit Operations by G. G. Brown et al.4.Unit Operations of Chemical Engineering by W. L. McCabe, J. C. Smith and P. HarriottReference Book:1.A Text Book of Heat Transfer by S. P. Sukhatme2.Heat Transmission by W. H. McAdams 3.Heat exchangers by H. Martin