

Course Code	CP305			
Course Title	Energy Systems Design			
No. of Credits	3			
Pre-requisites	ME323			
Compulsory/Optional	Compulsory			
Aim(s): To give students the knowledge required to design selected heat transfer equipment and to estimate the heat load in a sample building for air conditioning purposes.				
Intended Learning Outcomes:				
On successful completion of the course, the students should be able to;				
ILO1: Design or formulate specifications of heat transfer equipment such as boilers, condensers, evaporators, furnaces.				
ILO2: Apply the knowledge of psychrometric charts to depict property changes during various processes involving air/water vapor systems and to do necessary calculations.				
ILO3: Estimate the heat load for a given air conditioning applications.				
Topics	Time Allocation/Hours			
	L	T	P	A
<ul style="list-style-type: none"> Introduction to heat exchangers for process industry Theory and types of heat exchangers, Introduction to pinch analysis. 	06			
<ul style="list-style-type: none"> Boiling and condensation Theory of boiling and condensation, Industrial applications of boilers, condensers, furnaces, and evaporators. 	08	02		
<ul style="list-style-type: none"> Design of heat exchangers 			21	
<ul style="list-style-type: none"> Introduction to air-conditioning Review of psychrometric chart. 	06	02		
<ul style="list-style-type: none"> Design of air-conditioning systems 			21	
Total equivalent hours	20	04	21	
Recommended Texts:				
<ul style="list-style-type: none"> Richardson, J. F., Harker, J. H., Coulson and Richardson's Chemical Engineering Design, (5 Ed), Oxford Press, Butterworth-Heinemann, 2002. Sinnott, R. K., Coulson and Richardson's Chemical Engineering Design, (3 Ed). Oxford, Butterworth-Heinemann, 1999. Kreider, J. F., Curtiss, P. S., Rabl, A., Heating and Cooling of Buildings, (2 Ed), McGraw Hill, 2002. Sri Lanka Energy Audit Manual, (Module 1-4), Sri Lanka Sustainable Energy Authority and Sri Lanka Energy Managers Association. 				
Assessment	Percentage Mark			
In-course Tutorials/Assignments/Quizzes/Design Report/Laboratory work	50	50		
End-semester		50		