

Lecture Plan

REFRIGERATION AND EQUIPMENT ENGINEERING (FEN-311), 2+1=3

Theory

SL. No.	Topics	No. of Lectures	Course instructor
1.	Basic concepts: Force, work, power, energy	1	Dr. Parmanand Prabhakar
2.	Volume, pressure, temperature	1	
3.	Heat, specific heat, sensible & latent heat	1	
4.	Heat vs work (path function concept)	1	
5.	Introduction to thermodynamics Laws of thermodynamics	1	
6.	Laws of thermodynamics	1	
7.	Perfect gas laws	1	
8.	Thermodynamic processes	1	
9.	Enthalpy, entropy & thermodynamic cycles	1	
10.	History, definition, and principles of refrigeration	1	
11.	Classification of refrigeration systems	1	
12.	Air refrigeration & vapour absorption system	1	
13.	Vapour compression refrigeration system (VCRS)	1	
14.	Theoretical vs actual refrigeration cycle	1	
15.	Advantages & limitations of VCRS	1	
16.	Layout & construction of refrigeration plant	1	
17.	Insulating materials for cold storage	1	
18.	Storage capacity & ante-room usage	1	
19.	Compressors, Evaporators	3	
20.	Condensers, Expansion Valves, Refrigerants	2	
21.	Auxiliary Equipment - Receiver, oil charging, gas purging, defrosting	1	
22.	Ice Plant & Freezers: Ice plant: planning, brine preparation , Types of ice & storage, Freezers: plate, blast, tunnel, immersion	3	
23.	Refrigeration in Fisheries: RSW, CSW systems onboard vessels, Refrigerated transport & fish storage	3	
24.	Cooling Load & Psychrometry- Unit of refrigeration, COP & refrigeration effect, Psychrometric chart & applications, Cooling load estimation & heat gain	3	
25.	Machines & Maintenance:Power transmission (belt, gear, chain) + maintenance of refrigeration systems	1	
		34	

Practical

SL. No.	Topics	No. of Lectures	Course instructor
1.	Layout drawing of refrigeration plant	1	Dr. Parmanand Prabhakar
2.	Fish processing plant layout	1	
3.	Refrigeration symbols (graphical representation)	2	
4.	Operation of compressors, condensers and evaporators	2	
5.	Expansion valves handling	1	
6.	High & low pressure switches	1	
7.	Auxiliary Equipment: Study of receiver, oil charging & draining, Gas purging & defrosting methods	2	
8.	Section D: Machinery & Power Transmission: Power transmission systems in fish processing	1	
	Industrial Visits: Visit to refrigeration/processing plant. Visit to ice plant.	2	
9.	Numerical & Calculations: Calculation of refrigeration effect, Calculation of cooling load, Psychrometric chart applications.	3	
Total		16	



Dr. Parmanand Prabhakar
(Course instructor)