

# Bangladesh Polytechnic Institute

Technology: **Automobile**

Semester: 2<sup>nd</sup>

Sub. Name: **BASIC RAC & TRANSPORT REFRIGERATION (6221)**

T P C: 2 6 4

## Course Outline

Teacher Name: Md. Mostafizur Rohaman

Mob.No: 01761-751271

Class No.	Discussion and Explanation of Topics/ Titles	Remarks
Class-1	<ul style="list-style-type: none"> <li>❖ <b>Understand the science of refrigeration.</b></li> <li>➤ Define refrigeration, refrigerant and refrigerator.</li> <li>➤ Mention the laws of refrigeration.</li> <li>➤ Mention the application of refrigeration in our daily life.</li> </ul>	
Class-2	<ul style="list-style-type: none"> <li>❖ <b>Understand the science of refrigeration.</b></li> <li>➤ Define the heat, temperature &amp; pressure.</li> <li>➤ Mention the units of heat, temperature and pressure.</li> <li>➤ Describe the methods of heat transfer in the field of refrigeration.</li> </ul>	
Class-3	<ul style="list-style-type: none"> <li>❖ <b>Understand different methods of refrigeration.</b></li> <li>➤ List different methods of refrigeration.</li> <li>➤ Identify the refrigeration systems used in automobile airconditioning..</li> </ul>	
Class-4	<ul style="list-style-type: none"> <li>❖ <b>Understand different methods of refrigeration</b></li> <li>➤ Mention the principle of evaporative refrigeration.</li> <li>➤ Describe operation of vapor compression refrigeration system.</li> </ul>	
Class-5	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of vapor compression system components.</b></li> <li>➤ Mention the function of compressor, condenser, expansion device and evaporator.</li> <li>➤ Mention the classification of compressors, condensers, expansion valves and evaporators used in automobile air conditioner</li> <li>➤ State the cycling and non cycling compressor.</li> <li>➤ Describe the operation of swash-plate compressors, scotch yoke compressors and</li> </ul>	
Class-6	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of vapor compression system components.</b></li> <li>➤ Mention the advantages and disadvantages of different types of compressors used in automobile air conditioner.</li> <li>➤ Mention the advantages &amp; disadvantages of plate, fin type, serpentine type and drawn cup type evaporators.</li> <li>➤ Describe the operation of thermostatic expansion valve, H-type expansion valve and</li> <li>➤ orifice (expansion tube) used in automobile air conditioner.</li> </ul>	
Class-7	 <b>Feedback</b>	
Class-8	 <b>Feedback</b>	
Class-9	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of the accessories used in auto air conditioner refrigeration cycle.</b></li> <li>➤ List the accessories used in auto air conditioner refrigeration cycle.</li> <li>➤ Mention the function of accessories used in automobile air conditioner refrigeration cycle.</li> <li>➤ Describe the operation of receiver, dryer, sight glass and fusible plug.</li> </ul>	
Class-10	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of the accessories used in auto air conditioner refrigeration cycle.</b></li> <li>➤ Describe the conversion Process of CNG fuel.</li> <li>➤ Mention the safety precaution of CNG fuel handily.</li> </ul>	

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Class-11	 <b>Feedback</b>	
Class-12	 <b>Class Test</b>	
Class-13	<ul style="list-style-type: none"> <li>❖ <b>Understand the application of refrigerants.</b></li> <li>➤ Define refrigerant</li> <li>➤ Mention the classification of refrigerants</li> <li>➤ List the refrigerant of CFCs, HCFCs and HFCs groups.</li> <li>➤ State the desirable properties of an ideal refrigerants.</li> <li>➤ Identify the refrigerants by number.</li> </ul>	
Class-14	<ul style="list-style-type: none"> <li>❖ <b>Understand the application of refrigerants</b></li> <li>➤ List the applications of common refrigerants.</li> <li>➤ Mention the properties of most commonly used refrigerant viz. R-12 &amp; R-134a</li> <li>➤ Describe the refrigerant cylinder handling.</li> <li>➤ Identify the color codes of refrigerant cylinde</li> </ul>	
Class-15	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of automobile air-conditioning system.</b></li> <li>➤ Define air conditioning system</li> <li>➤ State the purpose of auto air-conditioning.</li> <li>➤ Identify the components of automobile air-conditioning system.</li> <li>➤ Describe the operation of automobile air-conditioning system (cooling and heating).</li> </ul>	
Class-16	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of automobile air-conditioning syste</b></li> <li>➤ Describe the air distribution system of a car air conditioner (including ventilation system).</li> <li>➤ Describe the automotive vehicle body insulation system.</li> <li>➤ Describe the filtering system of automobile air-condition system.</li> </ul>	
Class-17	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of automobile air conditioner control system.</b></li> <li>➤ Identify the control panel switches and levers of automobile air conditioner (heating and cooling system).</li> <li>➤ Describe the operation of control panel unit with sketch (heating and cooling)</li> <li>➤ Describe the anti icing control system of automobile air conditioner.</li> </ul>	
Class-18	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of automobile air conditioner control system.</b></li> <li>➤ Describe the anti icing control system of automobile air conditioner.</li> <li>➤ Draw the electric wiring diagram of auto air conditioner including all safety and control devices.</li> <li>➤ Describe the manual and automatic control systems (including HVAC controller) of automotive air-conditioning system.</li> </ul>	
Class-19	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of automobile air conditioner control system</b></li> <li>➤ Draw the electric wiring diagram of auto air conditioner including all safety and control devices.</li> <li>➤ Describe the manual and automatic control systems (including HVAC controller) of automotive air-conditioning system</li> </ul>	
Class-20	 <b>Feedback</b>	
Class-21	 <b>Feedback</b>	

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<b>Model Test</b>		
Class-22	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of coupling &amp; safety devices of automobile air conditioner.</b></li> <li>➤ Mention the purpose of magnetic clutch.</li> <li>➤ Mention the classification of magnetic clutch..</li> </ul>	
Class-23	<ul style="list-style-type: none"> <li>❖ <b>Understand the features of coupling &amp; safety devices of automobile air conditioner</b></li> <li>➤ Describe the operation of magnetic clutch.</li> <li>➤ Identify the safety devices used in cycling compressors automobile air conditioning systems.</li> <li>➤ Mention the function of various safety device in automobile air conditioner</li> </ul>	
Class-24	<ul style="list-style-type: none"> <li>❖ <b>Understand the concept of Alternative fuel.</b></li> <li>➤ Define Alternative fuel.</li> <li>➤ Mention the different type of Alternative fuel used in SI &amp; CI engines.</li> <li>➤ Explain the composition different alternative fuels.</li> <li>➤ Mention the advantages &amp; disadvantages of alternative fuel</li> </ul>	
Class-25	<ul style="list-style-type: none"> <li>❖ <b>Understand the concept of transport refrigeration.</b></li> <li>➤ Define transport refrigeration</li> <li>➤ Outline the importance of transport refrigeration</li> <li>➤ Mention the field of application of transport refrigeration.</li> <li>➤ List various non-mechanical transport refrigeration system..</li> </ul>	
Class-26	<ul style="list-style-type: none"> <li>❖ <b>Understand the concept of transport refrigeration.</b></li> <li>➤ List various mechanical transport refrigeration</li> <li>➤ Mention the advantages and disadvantages of non-mechanical transport refrigeration system.</li> <li>➤ Mention the advantages and disadvantages of mechanical transport refrigerationsystem</li> </ul>	
Class-27	<ul style="list-style-type: none"> <li>❖ <b>Understand features of refrigerated Covered Van and trailers.</b></li> <li>➤ Identify the various refrigeration system used in covered Van and trailers.</li> <li>➤ Describe the body insulation process of refrigerated Covered Van and trailers.</li> <li>➤ Describe the product sub-cooling in Covered Van refrigeration system.</li> <li>➤ Describe the operation of expendable refrigerant refrigeration system.</li> <li>➤ Describe the operation of eutectic solution in Covered Van refrigeration system.</li> <li>➤ Describe the servicing procedure of a conventional Covered Van refrigerationsystem.</li> </ul>	
Class-28	 <b>Feedback</b>	

**Reference Book:-**

1. Modern Refrigeration and Airconditioning  
Althouse/Turnquist/ Bracciano.
2. Basic Refrigeration and Airconditioning  
– Hazrh & Chakravarty.
3. Automobile Mechanics

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Teacher Name: Md. Mostafizur Rohaman  
– Crouse – Anglin.

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