

COURSE TITLE : AUTOMOTIVE AIR CONDITIONING
COURSE CODE : 5055
COURSE CATEGORY : E
PERIODS/WEEK : 4
PERIODS/SEMESTER : 60
CREDITS : 4

TIME SCHEDULE

Module	Topic	Periods
1	Understand the working of Air conditioning system and its components	15
2	Understand the working of various types of refrigerants and their properties.	15
3	Understand the working of Automotive heater system and its components	15
4	Understand the maintenance and service procedure of Air conditioner	15
TOTAL		60

GENERAL COURSE OUTCOME

Sl.No.	Sub	Student will be able to
1	1	Understand various types of refrigerants and their properties
	2	Explain the thermodynamic cycle of refrigeration Compute C.O.P and classify refrigerants
2	1	Understand working of Automotive heater system and its components
	2	Distinguish manually controller and automatic controlled air conditioner
3	1	Understand maintenance and service procedure of Air conditioner
	2	Justify evacuation and refilling of refrigerants. Carryout servicing of components in refrigeration system.

SPECIFIC COURSE OUTCOME

MODULE I

1.1.0 Understand the working of air conditioning system and its components.

- 1.1.1 Prepare the layout of air conditioning system and to know the location of components.
- 1.1.2 List the components of air conditioning system.
- 1.1.3 Explain the working of compressor.

- 1.1.4 Describe the working of condenser.
- 1.1.5 Compare the high pressure service valve and thermostatic expansion valve
- 1.1.6 Know the working of evaporator
- 1.1.7 Specify the significance of temperature control in evaporator.

MODULE II

2.1.0 Understand the working of various types of refrigerants and their properties.

- 2.1.1 Classify the refrigerants.
- 2.1.2 List the coding of refrigerants.
- 2.1.3 List the desirable properties of refrigerants
- 2.1.4 List the refrigerants for C F C
- 2.1.5 Know the method of handling refrigerants
- 2.1.6 Explain thermodynamic cycle in car air conditioning system
- 2.1.7 Compute C O P

MODULE III

3.1.0 Understand the working of automotive heater system and its components

- 3.1.1 Explain Automotive Heaters.
- 3.1.2 Distinguish manually controlled and automatic controlled air conditioner and heating System.
- 3.1.3 Describe the working of temperature control mechanism.
- 3.1.4 List the safety devices in Air conditioning system
- 3.1.5 Explain the method of overload protection in air conditioners

MODULE IV

4.1.0 Understand the maintenance and service procedure of Air conditioner

- 4.1.1 Know the air conditioner maintenance and service
- 4.1.2 Explain inspection procedure using manifold gauge.
- 4.1.3 Describe the servicing of heater system.
- 4.1.4 Analyze the need for replacing components in heating system
- 4.1.5 Justify the evacuation and refilling of refrigerants.
- 4.1.6 Explain the trouble shooting in air controlling system
- 4.1.7 Know the servicing of components.

CONTENT DETAILS

MODULE I

Basic air conditioning system - location components, layout of air conditioning system, Components - compressor, condenser and high pressure service valve, thermostatic expansion valve, evaporator, controlling evaporator temperature

MODULE II

Classification of refrigerants – Coding of Refrigerants - Desirable properties of refrigerants-Substitute for CFC refrigerants - Containers - Handling refrigerants, air conditioning lubricants. Thermodynamic Cycle of Air conditioner-Vapour Compression cycle ,Coefficient of Performance

MODULE III

Automotive heaters, manually controlled air conditioner and heater system, automatically controlled air conditioner and heater systems, automatic temperature control, safety devices - air conditioning protection&engine protection.

MODULE IV

Air conditioner maintenance and service, inspection using manifold gauge, servicing heater system, removing and replacing components, evacuation and refilling of refrigerant, trouble shooting of air controlling system, servicing of compressor

TEXT BOOKS

- William H. Crouse and Donald I. Anglin - Automotive Air conditioning - McGraw-Hill

REFERENCE

- Mike Stubblefield and John Haynes - Automotive Heating & Air Conditioning Systems Manual- Haynes manuals
- Paul Weiser - Automotive Air Conditioning – Reston publishing co. Inc
- MacDonald, K.I - Automotive Air Conditioning – Theodore Audul series
- Boyce H. Dwiggin - Automotive Air Conditioning – Delmar publishers