



## SRI VENKATESWARA COLLEGE OF ENGINEERING

## COURSE DELIVERY PLAN - THEORY

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Department of Automobile Engineering		LP: AE 18008
		Rev. No: 00
B.E/B.Tech/M.E/M.Tech : Automobile Engineering	Regulation:2013	Date: 14/12/2017
PG Specialisation : NA		
Sub. Code / Sub. Name : AT 18008 Automotive Air-conditioning		
Unit : I		

**Unit Syllabus:** Purposes of Heating, Ventilation and Air Conditioning- Environmental Concerns- Ozone layer depletion- Location of air conditioning components in a car – Schematic layout of a vehicle refrigeration system. Psychrometry – Basic terminology and Psychrometric mixtures- Psychrometric Chart- Related problems

Objective:

Session No *	Topics to be covered	Ref	Teaching Aids
01	Introduction about Automotive air conditioning	1,5	BB
02	Purposes of Heating	1,5,6	BB
03	Purpose of Ventilation and Air Conditioning	3,4	BB
04	Environmental Concerns, Ozone layer depletion	1,2	BB
05	Location of air conditioning components in a car	1,5	BB
06	Schematic layout of a vehicle refrigeration system	1,5	BB
07	Psychrometry – Basic terminology	1,5	BB
08	Psychrometric mixtures	1,5	BB
09	Psychrometric Chart- Related problems	1,5	BB
<b>Content beyond syllabus covered (if any):</b> Demonstration of vehicle air conditioning system in the laboratory.			

\* Session duration: 50 minutes



Sub. Code / Sub. Name: AE 18008 Automotive Air-conditioning

Unit : II

**Unit Syllabus :** Vehicle Refrigeration System and related problems- Fixed thermostatic and Orifice tube system- Variable displacement thermostatic and Orifice tube system- Vehicle air conditioning operation Types of compressor- Compressor Clutches- Compressor Clutch electrical circuit- Compressor lubrication- Condensers- Evaporators- Expansion devices- Evaporator temperature and pressure controls- receiver-drier- Accumulators- refrigerant hoses, Connections and other assemblies- Heating system

Objective:

Session No *	Topics to be covered	Ref	Teaching Aids
10	Vehicle Refrigeration System and related problems	1,5	BB
11	Fixed thermostatic and Orifice tube system	1,6	BB
12	Variable displacement thermostatic and Orifice tube system	1,6	BB
13	Vehicle air conditioning operation Types of compressor	1,5	BB
14	Compressor Clutches- Compressor Clutch electrical circuit	2,6	BB
15	Compressor lubrication- Condensers	3,4	BB
16	Evaporators, Expansion devices	3,4	BB
17	Evaporator temperature and pressure controls	3,4	BB
18	Receiver-drier- Accumulators- refrigerant hoses, Connections and other assemblies- Heating system	3,4	BB
Content beyond syllabus covered (if any):			

\* Session duration: 50 mins



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**Sub. Code / Sub. Name:** AT 18008 Automotive Air-conditioning

Unit : III

**Unit Syllabus :** Types of Control devices- Preventing Compressor damage- Preventing damage to other systems- Maintaining driveability- Preventing Overheating Ram air ventilation- Air delivery Components- Control devices- Vacuum Controls Containers – Handling refrigerants – Discharging, Charging & Leak detection – Refrigeration system diagnosis – Diagnostic procedure – Ambient conditions affecting system pressures

**Objective:**

Session No *	Topics to be covered	Ref	Teaching Aids
19	Types of Control devices, Preventing Compressor damage	1 to 6	BB
20	Preventing damage to other systems	1 to 6	BB
21	Maintaining driveability- Preventing Overheating Ram air ventilation	1 to 6	BB
22	Air delivery Components- Control devices	1 to 6	BB
23	Vacuum Controls Containers – Handling refrigerants	1 to 6	BB
24	Refrigerant Discharging, Charging	1 to 6	BB
25	Refrigerant Leak detection	1 to 6	BB
26	Refrigeration system diagnosis – Diagnostic procedure	1 to 6	BB
27	Ambient conditions affecting system pressures	1 to 6	BB

**Content beyond syllabus covered (if any):**



Sub. Code / Sub. Name: AT 18008 Automotive Air-conditioning

Unit : IV

**Unit Syllabus :** Different types of sensors and actuators used in automatic temperature control- Fixed and variable displacement temperature control- Semi Automatic- Controller design for Fixed and variable displacement type air conditioning system

**Objective:**

Session No *	Topics to be covered	Ref	Teaching Aids
28	Different types of sensors and actuators used in automatic temperature control	1 to 6	BB
29	Different types of sensors and actuators used in automatic temperature control	1 to 6	BB
30	Fixed and variable displacement temperature control	1 to 6	BB
31	Fixed and variable displacement temperature control	1 to 6	BB
32	Semi Automatic- Controller design for Fixed variable displacement type air conditioning system	1 to 6	BB
33	Semi Automatic- Controller design for Fixed variable displacement type air conditioning system	1 to 6	BB
34	Controller design for variable displacement type air conditioning system	1 to 6	BB
35	Controller design for variable displacement type air conditioning system	1 to 6	BB
36	Controller design for variable displacement type air conditioning system	1 to 6	BB
<b>Content beyond syllabus covered (if any):</b>			



Sub. Code / Sub. Name: AT 18008 Automotive Air-conditioning

Unit : V

**Unit Syllabus :** Special tools for servicing vehicle air conditioning – Diagnosing components and air conditioning systems- Diagnosing cooling system- Air delivery system- Automatic temperature Control system diagnosis and service

**Objective:**

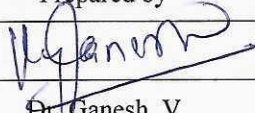
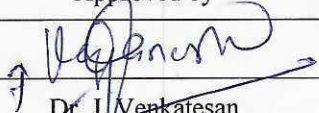


Session No *	Topics to be covered	Ref	Teaching Aids
37	Special tools for servicing vehicle air conditioning	1 to 6	BB
38	Special tools for servicing vehicle air conditioning	1 to 6	BB
39	Diagnosing components and air conditioning systems	1 to 6	BB
40	Diagnosing components and air conditioning systems	1 to 6	BB
41	Diagnosing cooling system	1 to 6	BB
42	Diagnosing cooling system	1 to 6	BB
43	Diagnosing Air delivery system	1 to 6	BB
44	Automatic temperature Control system diagnosis and service	1 to 6	BB
45	Automatic temperature Control system diagnosis and service	1 to 6	BB
<b>Content beyond syllabus covered (if any):</b>			



Sub Code / Sub Name: AE 18008 Automotive Air-conditioning

**REFERENCES:**

1. Warren Farnell and James D.Halderman, "Automotive Heating, Ventilation, and Air Conditioning systems", Classroom Manual, Pearson Prentice Hall, 2004
2. William H Crouse and Donald L Anglin, "Automotive Air conditioning", McGraw Hill Inc., 1990.
3. Mitchell Information Services, Inc., "Mitchell Automatic Heating and Air Conditioning Systems", Prentice Hall Inc., 1989.
4. Paul Weisler, "Automotive Air Conditioning", Reston Publishing Co. Inc., 1990.
5. McDonald, K.L., "Automotive Air Conditioning", Theodore Audel series, 1978.
6. Goings, L.F., "Automotive Air Conditioning", American Technical services, 1974

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Date	04/03/2022	04/03/2022
Remarks *:	The same lesson plan is followed for the A.Y. 2022-23	
Remarks *:		

\* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD

The same lesson plan is followed for the A.Y. 2023-24

