Syllabus For Automobile Sales consultant

Course Name	**Automotive AC Technician**
Sector	AUTOMOTIVE
Course Code	AUT/2024/AACT/334
Occupation	Technician in automotive service sector.
Job Description	Automotive AC Technicians install, diagnose, repair, and replace air conditioning systems. They use specialized tools and equipment to identify and fix problems with the system & typically work in dealerships, repair shops, or service centers.
Anticipated Volume of Training	390 Hrs (Theory- 90 Hrs + Practical- 180 Hrs, Employability Skill – 60 Hrs, OJT: 60 Hrs.)
LEVEL	3
Trainees' Entry Qualification	8th Class + 1 year ITI with 2 years of experience in Automotive Sector OR 8th Class + 2 year ITI with 1 year of experience in Automotive Sector OR 10th Class with 1 Year of experience OR Certificate-NSQF (Four Wheeler Service Assistant Level 3) with 2 Years of experience in Automotive Service
Trainers Qualification	BE/ B.Tech in Mechanical/Automobile Engineering with 1years of relevant industry experience as an Engineer in the field of Automobile service sector. Or, Diploma in Mechanical/Automobile Engineering with 2years of relevant industry experience as a Junior Engineer in the field of Automobile service sector. Or, NTC/NAC in Automobile or Motor Mechanic Vehicle with 3 years of relevant Automotive Service Technician and experience in Automotive AC service.

Structure of Course:

Module No.	Module Detail	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs)
1	**Fundamentals of Automotive Air Conditioning Systems Outcome:**	Identify the components and operation of an automotive Air Conditioning system.	30	30	60
2	**Safety, Environmental Regulations and Tools**	Apply safety procedures and environmental regulations when working with automotive AC systems.	10	20	30
3	**Refrigerant Types, Handling, and Retrofitting**	Evaluate refrigerant types and properties for safe handling and use in automotive AC systems.	20	40	60
4	**AC System Diagnosis and Repair**	Diagnose and repair common automotive AC system problems.	20	70	90
5	**Customer Service and effective**	Demonstrate customer service and effective communication	10	20	30

Module No.	Module Detail	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs)
	Communication	at the workplace.			
6	**OJT**	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	--	60	60
7	**Employability Skill**	As per guided curriculum	60	--	60
		TOTAL:	150	240	390

SYLLABUS:

Module No. 1: Fundamentals of Automotive Air Conditioning Systems
Outcome:
Identify the components and operation of an automotive Air Conditioning system.

1.1 Theory Content:
Understanding the key components and principles of automotive Air Conditioning systems.
1.1.1 Overview of automotive AC systems and their significance in modern vehicles.
1.1.2 Key components: compressor, condenser, evaporator, and expansion valve.
1.1.3 Fundamental of refrigeration cycle and the basic principles of heat transfer.
1.1.4 Refrigerant in the AC system – Types, change of state.

1.2 Practical Content:
Hands-on identification of AC components and basic system testing.
1.2.1 Identification of AC components in vehicle.
1.2.2 Demonstration of refrigeration cycle using visual aids.
1.2.3 Dismantling and assembling of AC components.
1.2.3 Practice to check functioning of Auto AC system and checking the refrigerant pressure, measuring the temperature at the evaporator inlet and outlet.

Tools & Equipment needed:
AC System Components (for identification), Visual Aids (for demonstration), Basic Tools (wrenches, screwdrivers), Handouts/Manuals

Module No. 2: Safety, Environmental Regulations and Tools
Outcome:
Apply safety procedures and environmental regulations when working with automotive AC systems.

2.1 Theory Content:
Safety protocols, EPA regulations and the use of specialized tools.
2.1.1 Different safety protocols when working with AC systems.
2.1.2 EPA regulations related to refrigerant handling and certification requirements.
2.1.3 Overview of personal protective equipment (PPE) and its importance.
2.1.4 Different types of specialized tools used in AC system diagnosis and repair.

2.2 Practical Content:
Safe refrigerant handling, maintenance of equipment, and proper use of PPE.
2.2.1 Practice of handling PPE and its use.
2.2.2 Safe procedure of handling refrigerants.
2.2.3 Identify and select the essential tools such as manifold gauges, leak detectors, and vacuum pumps etc.
2.2.4 Carry out the equipment maintenance and calibration.

Tools & Equipment needed:

PPE (Gloves, Safety Goggles, Masks), Manifold Gauges, Refrigerant (for simulation)
EPA Regulations Documentation

Module No. 3: Refrigerant Types, Handling, and Retrofitting

Outcome:

Evaluate refrigerant types and properties for safe handling and use in automotive AC systems.

3.1 Theory Content:

Refrigerant types, their properties, and procedures for safe handling and retrofitting.
3.1.1 Different types of refrigerants used in automotive AC systems.
3.1.2 Methods of handling and storage of different refrigerants.
3.1.3 Steps of refrigerant recovery and recycling.
3.1.4 Procedure of retrofitting automotive AC systems to use new refrigerants.

3.2 Practical Content:

Hands-on training in handling different refrigerant types safely and retrofitting exercises.
3.2.1 Identify and practice to detect refrigerant leaks.
3.2.2 Carry out retrofitting to changes and adjustments of the components.

Tools & Equipment needed:

Refrigerant leak detector, Refrigerant Storage Containers, Manifold gauge set
Vacuum pump, Retrofitting Tools, Retrofitting Components

Module No. 4: AC System Diagnosis and Repair

Outcome:

Diagnose and repair common automotive AC system problems.

4.1 Theory Content:

AC system diagnosis, troubleshooting techniques, and identification of components.
4.1.1 Common AC system problems and their symptoms.
4.1.2 Diagnostic techniques - pressure testing, temperature readings, and visual inspections etc.
4.1.3 Use of service manuals and diagnostic tools.
4.1.4 Troubleshooting of electrical and mechanical issues in AC systems.

4.2 Practical Content:

Exercises in diagnosing AC system problems, using diagnostic tools, and replacing AC components.
4.2.1 Identify and diagnose common AC system problems.
4.2.2 Use of diagnostic tools and equipment.
4.2.3 Practice of replacing AC components, flushing, cleaning and refitting.

Tools & Equipment needed:

Diagnostic Tools (Leak detectors, gauges), Disassembly/Reassembly Tools
AC System Components (for practice), Multimeter, Refrigerant (for practical work), Oscilloscope, Advanced automotive diagnostic tools, Electrical Testing Tools
Vehicles (for practical training)

Module No. 5: Customer Service and effective Communication

Outcome:

Demonstrate customer service and effective communication at the workplace..

5.1 Theory Content:

Professionalism in customer interactions, effective communication, and employability skills.
5.1.1 Professionalism in customer interactions and communication.
5.1.2 Procedure to explain AC system issues and repair options to customers.
5.1.3 Cost estimation and time management for repair work.
5.1.4 Ways of handling customer complaints, inquiries, and concerns effectively.
5.1.5 Writing resume, preparation for job interview and career development.

5.2 Practical Content:
Exercises on customer interaction, resume building and preparation for job interview.
5.2.1 Role-playing exercises for professional customer interactions.

5.2.2 Practice of explaining AC system issues clearly to customers.

5.2.3 Preparation of estimates for hypothetical repair scenarios.

5.2.4 Handling simulated customer complaints and inquiries.

5.2.5 Creating resumes, preparing for job interviews and planning career development in the field.

Tools & Equipment needed:
Simulation Materials (Customer Interaction), Resume Templates, Interview Scenario Materials

Module No.6 : OJT

Outcome: Work in real job situation with special emphasis on basic safety and hazards in this domain

Practical Content:

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours.**)

Module No.7 : Employability Skills **(60 Hrs)**

Key Learning Outcomes

Introduction to Employability Skills Duration: 1.5 Hours

After completing this programme, participants will be able to:
1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative

thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.

7. Describe the benefits of continuous learning.

Basic English Skills Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy Duration:5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely

19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding

and associated financial and legal risks with its mitigation plan

28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service Duration: 5 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Module No.	Outcome	Assessment Criteria
1	Identify the components and operation of an automotive Air Conditioning system.	Students will be able to - • Identify and explain the key components of an automotive AC system • Explain the principles of operation of an automotive AC system • Check for functioning AC system and measure refrigerant pressure & temperature at the evaporator inlet and outlet.
2	Apply safety procedures and environmental regulations when working with automotive AC systems.	Students will be able to - • Demonstrate safe refrigerant handling procedures. • Illustrate EPA regulations related to refrigerant handling and certification requirements. • Demonstrate the use of personal protective equipment (PPE). • Explain the use special tools to diagnosis and repair of AC system.
3	Evaluate refrigerant types and properties for safe handling and use in automotive AC systems.	Students will be able to - • Identify the properties of different refrigerant. • Demonstrate refrigerant recovery and recycling procedure. • Explain the retrofit automotive AC systems to use new refrigerants.
4	Diagnose and repair common automotive AC system problems.	Students will be able to - • Identify common automotive AC system problems. • Demonstrate the use of diagnostic tools and. • Explain the steps involved in replacing & refitting the AC components. • Explain the maintenance procedure of Automotive AC system.

Module No.	Outcome	Assessment Criteria
5	Demonstrate customer service and effective communication at the workplace.	Students will be able to - • Demonstrate professionalism in customer interactions and communication. • Explain AC system issues and repair options to customers clearly and concisely. • Prepare cost estimates and timelines for repair work. • Illustrate to handle customer complaints, inquiries, and concerns. • Demonstrate a strong focus on meeting customer needs • Effectively manages and resolves conflicts or disputes with customers • Utilize feedback, surveys or other tools to measure and improve customer satisfaction levels
6	OJT	Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)
7	Employability Skill	As per guided curriculum

List of Tools, Equipment & materials needed for 30 Trainees:

Sl No	Tools, Equipment & Materials Needed	Quantity
1	AC System Components (for identification)	1 Set
2	Visual Aids (for demonstration)	1 Set
3	Basic Tools (wrenches, screwdrivers)	5 Set
4	Handouts/Manuals	30 sets
5	PPE (Gloves, Safety Goggles, Masks)	30 sets
6	Refrigerant (for simulation)	As required
7	EPA Regulations Documentation	1 set
8	Refrigerant leak detector	1
9	Refrigerant Storage Containers	1 Set
10	Manifold gauge set	1 Set
11	Vacuum pump	1 Set
12	Retrofitting Tools	1 Set
13	Retrofitting Components	1 Set
14	Diagnostic Tools (Leak detectors, gauges)	1 Set
15	Disassembly/Reassembly Tools	5 Set
16	Multimeter	5
17	Oscilloscope	1 Set
18	Advanced automotive diagnostic tools	1 Set
19	Electrical Testing Tools	1 Set
20	Vehicles (for practical training)	2 Nos
21	Simulation Materials (Customer Interaction)	1 Set
22	Resume Templates	As required
23	Interview Scenario Materials	As required
24	Job Search Resources	As required

Marks Distribution

Outcome	Outcome	Total Th marks	Total Pr marks	Total OJT marks
Identify the components and operation of an automotive Air Conditioning system.	AUT/0412/OC1	50	110	0
Apply safety procedures and environmental regulations when working with automotive AC systems.	AUT/0412/OC2	20	100	0
Evaluate refrigerant types and properties for safe handling and use in automotive AC systems.	AUT/0412/OC3	30	150	0
Diagnose and repair common automotive AC system problems.	AUT/0412/OC4	30	190	0
Demonstrate customer service and effective communication at the workplace.	AUT/0412/OC5	20	100	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	AUT/0412/OC6	0	0	150
Employability Skills – 60 Hrs	DGT/VSQ/N0102	50	0	0