

Name of ICD Programme: Mechanical Engineering (DME)

Name of Certificate Programme: Air Conditioning Mechanic (CAC)

Title of the Course: TRADE SPECIFIC TRAINING -1

Subject Code: QPME-201

L	T	P	Credits	Weekly Load
0	0	8	01	8 hours

Course Outcomes:

After successful completion of course, the students should be able to:

CO1: Handle various RAC tools and perform fundamental operations

CO2: Understand the working and applications of various RAC systems.

CO3: Perform installation and servicing of RAC equipment.

CO4: Carry out troubleshooting and repair RAC systems.

CO-PO & PSO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	2	2	1	3	3	2	2	3	2
CO2	3	2	2	2	2	2	2	3	2
CO3	3	3	2	3	3	3	3	3	3
CO4	2	3	2	3	2	3	3	3	3
Avg.	2.5	2.5	1.75	2.75	2.5	2.5	2.75	3.0	2.5

List of Activities:

1. Identification and study of major components and tools used in RAC system.
2. Cutting and Bending of Copper Tubes.
3. Flaring and Swaging of Copper Tubes.
4. Soldering and Brazing of Copper Tubes.
5. Electrical Controls and Energy Measurement in RAC Systems.
6. Installation and Servicing of Domestic Refrigerator.
7. Installation and Servicing of Window-Type Air Conditioner.
8. Installation and Servicing of Split-Type Air Conditioner.
9. Leak Detection in Refrigeration System.
10. To perform gas charging in a refrigeration system.

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03/03/2026
PINDRIT SINOH
09/03/2026
(DIVESH BHARTI)
(AP-ME)
M.A. Acharya
(ASP)
(Archan Talwar)

Name of ICD Programme: Mechanical Engineering (DME)

Name of Certificate Programme: Air Conditioning Mechanic (CAC)

Title of the Course: **TRADE SPECIFIC TRAINING -2**

Subject Code: **QPME-202**

L	T	P	Credits	Weekly Load
0	0	8	01	8 hours

Course Outcomes:

After successful completion of course, the students should be able to:

CO1: Dis-assemble and assemble the major RAC components.

CO2: Demonstrate the working of advanced RAC systems.

CO3: Evaluate the performance of RAC equipment.

CO4: Diagnose faults and troubleshoot RAC systems using fault simulators.

CO-PO & PSO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	3	2	2	2	2	3	2	3	2
CO2	3	2	2	2	2	2	2	3	2
CO3	2	3	2	3	2	2	2	3	2
CO4	2	3	2	3	3	3	2	3	3
Avg.	2.5	2.5	2.0	2.5	2.25	2.5	2.0	3.0	2.25

List of Activities:

1. Dismantling, inspection and cleaning of different types of evaporators/Condensers used in refrigeration systems.
2. Dismantling, inspection and overhauling of modern compressors used in refrigeration systems.
3. Demonstration and performance analysis of a Vapor Absorption Refrigeration System.
4. Demonstration of working principle of a water cooler.
5. Demonstration of working principle of a desert cooler.
6. Demonstration of working principle of a cooling tower.
7. Measurement of temperature and pressure at various points of a refrigeration system using thermometers and pressure gauges.
8. Measurement and calculation of COP of a Heat Pump Test Rig.
9. Measurement and calculation of COP of a Window Air Conditioner Test Rig.
10. Troubleshooting of refrigeration and air-conditioning systems using an Air Conditioner Fault Simulator.

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Name of ICD Programme: Mechanical Engineering (DME)

Name of Certificate Programme: Air Conditioning Mechanic (CAC)

Title of the Course : **TRADE SPECIFIC TRAINING -3**

Subject Code : **QPME-301**

L	T	P	Credits	Weekly Load
0	0	8	01	8 hours

Course Outcomes:

After successful completion of course, the students should be able to:

CO1: Analyze the performance of advanced HVAC systems.

CO2: Perform heat load calculations for air-conditioning applications.

CO3: Design basic central air-conditioning systems for commercial applications.

CO4: Evaluate real-life HVAC installations through industrial visits and case studies and recommend suitable system improvements.

CO-PO & PSO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	3	2	2	3	3	2	2	3	2
CO2	3	3	3	3	2	2	2	3	2
CO3	3	3	3	2	3	3	2	3	3
CO4	2	3	2	3	2	3	3	3	3
Avg.	2.75	2.75	2.5	2.75	2.5	2.5	2.25	3.0	2.5

List of Activities:

1. Performance analysis of Inverter Technology in HVAC systems.
2. Latest Trends in Air Conditioning Technology (AI and Smart Automation).
3. Psychometric Analysis of Air Conditioning Processes.
4. To perform the Heat Load Calculation for a given room.
5. Design of central Air Conditioning System.
6. Visit of Auditorium (SLIET Longowal) for data collection and layout development of Central Air Conditioning
7. Industrial visit for data collection and layout development of Ice Plant.
8. Industrial visit for data collection and layout development of Cold Storage Unit.
9. Case Study of a Hospital Air Conditioning System including study of HVAC layout and ventilation requirements.
10. Case Study of a Restaurant Air Conditioning System including heat load calculation and selection of a suitable air-conditioning system.

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PINDARJI Singh
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Name of ICD Programme: Mechanical Engineering (DME)

Name of Certificate Programme: Air Conditioning Mechanic (CAC)

Title of the Course: TRADE SPECIFIC TRAINING -4

Subject Code: QPME-302

L	T	P	Credits	Weekly Load
0	0	8	01	8 hours

Course Outcomes:

After successful completion of course, the students should be able to:

CO1: Understand ducting configurations and room air distribution methods used in HVAC systems.

CO2: Design VRV System and Duct systems and prepare duct drawings as per calculated requirements.

CO3: Use HVAC software tools for cooling load estimation and duct design.

CO4: Perform fault diagnosis, leakage testing and energy audit of air-conditioning system.

CO-PO & PSO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	3	2	2	2	2	2	2	3	2
CO2	3	3	3	3	3	2	2	3	2
CO3	3	3	2	3	3	2	2	3	3
CO4	2	3	2	3	2	3	3	3	3
Avg.	2.75	2.75	2.25	2.75	2.5	2.25	2.25	3.0	2.5

List of Activities:

1. Demonstration of air distribution and working principle of air handling unit (AHU) with room air distribution and airflow pattern.
2. Demonstration of ducting and air distribution methods including loop perimeter, radial perimeter, extended plenum, ejector, downward and upward systems.
3. Fault Diagnosis, Maintenance and Energy Audit of RAC System.
4. Design of air duct using different duct design methods.
5. Preparation of duct layout drawing based on calculated design. (as per above activity)
6. Design of VRV System. (Low Duct/ Ductless technology)
7. Leakage testing and maintenance of air duct system.
8. Cooling load calculation using HVAC software (HAP - Carrier).
9. Psychrometric analysis using ASHRAE Psychrometric Chart.
10. Study and application of RAC design software tools such as CoolPack and McQuay Duct Sizer for basic refrigeration calculations and duct design.

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Sanjay

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