

Washtenaw Community College Comprehensive Report

UAT 136A Variable Refrigerant Flow (VRF) – The CITY MULTI Service Course (Mitsubishi) (UA 6012) Effective Term: Spring/Summer 2025

Course Cover

College: Advanced Technologies and Public Service Careers

Division: Advanced Technologies and Public Service Careers

Department: United Association Department (UAT Only)

Discipline: United Association Training

Course Number: 136A

Org Number: 28200

Full Course Title: Variable Refrigerant Flow (VRF) – The CITY MULTI Service Course (Mitsubishi)
(UA 6012)

Transcript Title: Variable Refrigerant Flow 6012

Is Consultation with other department(s) required: No

Publish in the Following:

Reason for Submission: New Course

Change Information:

Rationale: New United Association course

Proposed Start Semester: Fall 2024

Course Description: In this course, students will be introduced to the installation, operation, and troubleshooting of Variable Refrigerant Flow (VRF), specifically focusing on Mitsubishi City Multi VRF and Diamond System Builder mechanical systems. Topics include system applications, 410A refrigerant and associated piping, VRF technology, as well as installation and start-up procedures. City Multi controls wiring, local and remote communications, and review of commissioning procedures will also be discussed. Limited to United Association program participants.

Course Credit Hours

Variable hours: No

Credits: 1.5

The following Lecture Hour fields are not divisible by 15: Student Min ,Instructor Min

Lecture Hours: Instructor: 22.5 Student: 22.5

The following Lab fields are not divisible by 15: Student Min, Instructor Min

Lab: Instructor: 1.5 Student: 1.5

Clinical: Instructor: 0 Student: 0

Total Contact Hours: Instructor: 24 Student: 24

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Recognize the Mitsubishi City Multi VRF equipment, components and functions.

Assessment 1

Assessment Tool: Outcome-related presentation

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 80% of the students will score 80% or higher.

Who will score and analyze the data: U.A. Instructors

2. Identify the refrigerant piping, flow, state of matter, and operation in a Mitsubishi City Multi VRF system.

Assessment 1

Assessment Tool: Outcome-related presentation

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 80% of the students will score 80% or higher.

Who will score and analyze the data: U.A. Instructors

3. Demonstrate the start-up procedures and commissioning of a City Multi system per manufacturer's recommendations.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 80% of the students will score 80% or higher.

Who will score and analyze the data: U.A. Instructors

4. Troubleshoot system problems and correct deficiencies.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 80% of the students will score 80% or higher.

Who will score and analyze the data: U.A. Instructors

5. Demonstrate factory-trained and authorized warranty verification and documentation procedures.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 80% of the students will score 80% or higher.

Who will score and analyze the data: U.A. Instructors

Course Objectives

1. Examine and discuss the Mitsubishi City Multi VRF equipment and its components.
2. Review and explain the technical information, operation, and parameters of the VRF system components.
3. Discuss the various Mitsubishi remote controllers and wiring diagrams.
4. Examine and discuss refrigerant piping sizing, operation, and limitations in the VRF system.
5. Discuss the properties of 410A Refrigerant and its flow path in the VRF system.
6. Review the process of the start-up and commissioning of the VRF system based on the manufacturer's commissioning guide.
7. Demonstrate the start-up and commissioning of the VRF system utilizing the manufacturer's commissioning guide.
8. Explain the troubleshooting fault codes and their utilization/ interpretation.
9. Demonstrate the Mitsubishi Maintenance Tool specifically designed for VRF systems.
10. Discuss system piping evacuation and charging procedures.
11. Discuss the various Mitsubishi remote controllers and their wiring diagrams used in the field.
12. Discuss the Personal Protective Equipment (PPE) required to perform operation tasks on VRF systems.
13. Discuss maintenance scheduling for efficient operation of Mitsubishi VRF systems.
14. Discuss common faults and problems associated with troubleshooting VRF systems.
15. Review the history, methods, and the types of refrigerants used in the refrigeration systems.
16. Review the documentation needed to register for Mitsubishi warranty policy.
17. Discuss the process of qualifying to register as a factory-trained Mitsubishi representative for warranty issues.

New Resources for Course

Course Textbooks/Resources

Textbooks

Mitsubishi. *Mitsubishi Installation, Startup and Service Essentials*, ed. Mitsubishi Corporation , 2021

Manuals

Periodicals

Software

Equipment/Facilities

Reviewer

Action

Date

Faculty Preparer:

Tony Esposito

Faculty Preparer

May 09, 2024

