

## Washtenaw Community College Comprehensive Report

### UAT 208 Introduction to Oil-Less Magnetic Bearing Centrifugal Compressors (UA 6015) Effective Term: Fall 2020

#### Course Cover

**Division:** Advanced Technologies and Public Service Careers

**Department:** United Association Department

**Discipline:** United Association Training

**Course Number:** 208

**Org Number:** 28200

**Full Course Title:** Introduction to Oil-Less Magnetic Bearing Centrifugal Compressors (UA 6015)

**Transcript Title:** Intro Oil-Less Magne Burn 6015

**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 2020

**Course Description:** In this course, students will be introduced to magnetic bearing technology for Heating, Ventilation, Air Conditioning (HVAC) compressors. Topics include compressor history and theory, manufacturer-specific component operation and testing procedures. Students will also learn about monitoring software, from installation and communication to testing and troubleshooting issues. In addition, students will gain hands-on experience working with Danfoss Turbocor, Johnson Controls and Trane magnetic bearing compressors and equipment. Instructional materials will be provided for student use at their local Training Center. 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

## **Degree Attributes**

Below College Level Pre-Reqs

## **Request Course Transfer**

**Proposed For:**

## **Student Learning Outcomes**

1. Perform test procedures for the Danfoss Turbocor (DTC) compressor.

### **Assessment 1**

Assessment Tool: Demonstration

Assessment Date: Fall 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Observational 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. Troubleshoot DTC internal components using monitoring software (SMT) software and 9 pin / USB converter.

### **Assessment 1**

Assessment Tool: Demonstration- printout software results

Assessment Date: Fall 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Rubric

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. Disassemble, identify and reassemble magnetic bearing compressor manufactured by Danfoss, Trane and Johnson Control.

### **Assessment 1**

Assessment Tool: Demonstration

Assessment Date: Fall 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Skills 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. Discuss the history of compressors and their role in the HVAC industry.
2. Discuss safety concerns and personal protective equipment (PPE) when working with compressors and equipment.
3. Discuss the purpose and demonstrate the installation of the test harness.
4. Explain and demonstrate the test procedure for a DTC compressor, and record the results.
5. Demonstrate the installation, operation, and troubleshooting capabilities of Turbotool app on mobile devices.
6. Discuss and demonstrate STM software and connection to compressor.

7. Discuss and demonstrate the disassembly of topside and service side electronics using instructional resources.
8. Discuss and demonstrate disassembly of serviceable mechanical components.
9. Demonstrate the disassembling and reassembling of Danfoss, Trane and Johnson Control magnetic bearing compressors.
10. Troubleshoot mechanical parts to find pre-determined faults and failures.
11. Compare and contrast the equipment associated with Trane, Danfoss, and Johnson Control compressors and their functions.

## New Resources for Course

### Course Textbooks/Resources

Textbooks  
Manuals  
Periodicals  
Software

### Equipment/Facilities

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
<b>Faculty Preparer:</b> <i>Tony Esposito</i>	<i>Faculty Preparer</i>	<i>Jun 02, 2020</i>
<b>Department Chair/Area Director:</b> <i>Marilyn Donham</i>	<i>Recommend Approval</i>	<i>Jun 05, 2020</i>
<b>Dean:</b> <i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>Jun 10, 2020</i>
<b>Curriculum Committee Chair:</b> <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Oct 16, 2020</i>
<b>Assessment Committee Chair:</b> <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Oct 20, 2020</i>
<b>Vice President for Instruction:</b> <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Oct 22, 2020</i>