Washtenaw Community College Comprehensive Report

UAT 208 Introduction to Oilless Magnetic Bearing Centrifugal Compressors (UA 6015)
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: 208
Org Number: 28200
Full Course Title: Introduction to Oilless Magnetic Bearing Centrifugal Compressors (UA 6015)
Transcript Title: Intro Oilless Magnet Comp 6015
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Course Change
Change Information:
Course title
Course description
Outcomes/Assessment
Objectives/Evaluation
Rationale: Course updated to reflect current trends and technology in the industry.
Proposed Start Semester: Spring/Summer 2025
Course Description: In this course, students will be introduced to magnetic bearing technology for Turbocor Heating, Ventilation, and Cooling (HVAC) compressors. Topics will include compressor history, theory of operation, components, and operation. Students will download, install, and utilize monitoring software. Students will explore Danfoss Turbocor compressor (DTC) equipment and other magnetic bearing compressors. Upon course completion, students will have the opportunity to take the DTC compressor certification exam. 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 DTC compressor.
   Assessment 1
   Assessment Tool: Outcome-related demonstration
   Assessment Date: Spring/Summer 2025
   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

2. Troubleshoot DTC internal components using monitoring software (SMT) and 9 pin / USB converter.
   Assessment 1
   Assessment Tool: Outcome-related demonstration
   Assessment Date: Spring/Summer 2025
   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

3. Disassemble, identify and reassemble a magnetic bearing DTC compressor.
   Assessment 1
   Assessment Tool: Outcome-related demonstration
   Assessment Date: Spring/Summer 2025
   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 the test procedure for a DTC compressor.
5. Demonstrate the test procedure for a DTC compressor and record the results.

6. Demonstrate the installation, operation, and troubleshooting capabilities of Turbotool SMT app on mobile devices.
7. Discuss and demonstrate the disassembly of topside and service side electronics using instructional resources.
8. Explain the disassembly of serviceable mechanical components using instructional resources.
9. Demonstrate how to disassemble and reassemble DTC compressors.
10. Troubleshoot mechanical parts to find pre-determined faults and failures.
11. Demonstrate the installation of Turbotool software and connection to the compressor.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Reviewer	Action	Date
Faculty Preparer:		
Tony Esposito	*Faculty Preparer*	*Jan 23, 2025*
Department Chair/Area Director:		
Marilyn Donham	*Recommend Approval*	*Jan 28, 2025*
Dean:		
Eva Samulski	*Recommend Approval*	*Jan 28, 2025*
Curriculum Committee Chair:		
Randy Van Wagnen	*Recommend Approval*	*Apr 24, 2025*
Assessment Committee Chair:		
Jessica Hale	*Recommend Approval*	*Apr 26, 2025*
Vice President for Instruction:		
Brandon Tucker	*Approve*	*Apr 28, 2025*

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 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

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