

Washtenaw Community College Comprehensive Report

UAT 266 Methods in Teaching Start, Test, & Balance (UA 6009) Effective Term: Fall 2020

Course Cover

Division: Advanced Technologies and Public Service Careers

Department: United Association Department

Discipline: United Association Training

Course Number: 266

Org Number: 28200

Full Course Title: Methods in Teaching Start, Test, & Balance (UA 6009)

Transcript Title: Start, Test, & Balance (6009)

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Web Page

Reason for Submission: Course Change

Change Information:

Consultation with all departments affected by this course is required.

Course title

Course description

Outcomes/Assessment

Objectives/Evaluation

Rationale: Update United Association course

Proposed Start Semester: Fall 2020

Course Description: In this course, students will develop classroom and hands-on methods to create a mechanical equipment Start, Test, and Balance course at their local Training Centers. Students will navigate instructional resources including textbooks, online resources and demonstrations, as well as study the testing equipment and processes needed to document and evaluate the results of a pump performance verification and fluid flow measurements. The title of this course was previously Air and Water Balance. 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. Demonstrate fan and pump analysis using test equipment to evaluate performance as per manufacturers' specifications.

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. Demonstrate the process of measuring and documenting fluid flow in pipes and ducts.

Assessment 1

Assessment Tool: Skills 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

3. Prepare and present a five-minute lesson plan of instructional resources/methods of a Start-Test and Balance course for the student's local Training Center.

Assessment 1

Assessment Tool: Presentation

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

Course Objectives

1. Recognize and apply the calculations related to air and water balancing.
2. Distinguish the thermodynamics and physical properties of fluids and fluid flow.

3. Demonstrate fan analysis via comparisons of input power approximations, inlet and outlet pressures and RPM plotted on the fan curve.
4. Demonstrate pump analysis via comparisons of dead head and impeller size data plotted on the pump curve.
5. Explain fluid flows in pipes and ducts, and compare the data to the information plotted on the fan and pump curves.
6. Explain how to measure voltage and amperage and calculate horsepower input.
7. Identify data defined on the pump curve.
8. Measure hydronic flow for air handling unit (AHU) balancing devices, and measure flow via pressure drop at the inlet and outlet fittings.
9. Discuss the steps involved in testing and analysis.
10. Measure hydronic flow at balancing devices and flow via pressure drop at inlet and outlet fittings.
11. Demonstrate measuring airflow via duct traverse measurements.
12. Locate and navigate resources available on the United Association Online Learning Resources (UAOLR).
13. Discuss best practices for customizing UAOLR for use at local Training Centers.
14. Demonstrate the use of instructional methods and UAOLR resources.
15. Review fans and air flow fundamentals in classroom followed by fan analysis for documentation.
16. Review pumps and hydronic fluid flow fundamentals in classroom followed by pump analysis.

New Resources for Course

Course Textbooks/Resources

Textbooks

International Association of Plumbing and Mechanical Officials. *Start, Test, and Balance*, Fourth ed. IAPMO Group, 2018

Manuals

Periodicals

Software

Equipment/Facilities

Data projector/computer

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Tony Esposito</i>	<i>Faculty Preparer</i>	<i>May 15, 2020</i>
Department Chair/Area Director: <i>Marilyn Donham</i>	<i>Recommend Approval</i>	<i>May 20, 2020</i>
Dean: <i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>May 27, 2020</i>
Curriculum Committee Chair: <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Aug 10, 2020</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Aug 25, 2020</i>
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Aug 26, 2020</i>