# Washtenaw Community College Comprehensive Report

# UAT 174 Laser Scanning: Reality Capture for Construction (UA 3035)
# Effective Term: Fall 2020

## Course Cover

**Division:** Advanced Technologies and Public Service Careers
**Department:** United Association Department
**Discipline:** United Association Training
**Course Number:** 174
**Org Number:** 28200
**Full Course Title:** Laser Scanning: Reality Capture for Construction (UA 3035)
**Transcript Title:** Laser Scanning: Constr 3035
**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 use laser scanning equipment and related software to create 3D point clouds of existing buildings and Mechanical, Electrical, and Plumbing (MEP) systems, using Building Information Modeling (BIM) applications for use at local Training Centers. As part of a hands-on lab, students will scan an existing mechanical equipment room, and point clouds will be produced for spatial coordination and as-built applications utilizing available software. 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. List and perform the steps necessary to set up and employ the Faro Scanner.
   **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 loading of a point cloud file and available software into Faro Scene, as well as the methods of registering the project.
   **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

3. Demonstrate the steps for viewing and navigating a 3D piping model in association with the point cloud file inside of Navisworks Simulate/Manage.
   **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

4. Troubleshoot potential problems and develop solutions between scans and 3D models using available software.
   **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

## Course Objectives

1. Identify and demonstrate steps for proper set-up of a 3D scanner equipment.
2. Demonstrate steps to navigate the scanner menu options items and their applications.
3. Create project files and folders.
4. Identify safety precautions and hazards associated with the operation of scanners.
5. Load a point cloud file into Faro Scene and auto-register, manually register, and visually register the project.
6. Utilize AutoCAD to add 3D solid shapes to files to match point cloud data.
7. Utilize Fabrication CADmep to include piping components to files to match point cloud data.
8. Use Navisworks to append a point cloud project into the active Navisworks File Format (NWF).
9. Use Navisworks to section the project and create viewpoints.
10. Use Navisworks to review and measure areas in the project model for information and data.
11. Identify the potential problems associated with project models and the issues they can cause.
12. Compare and contrast the ability and costs associated with 3D scanning and equipment to standard 2D drawings to improve project planning.
13. Identify uses of a 3D scanner to reduce potential issues with other trades during a retrofit.

## New Resources for Course

## Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

## Equipment/Facilities

| Reviewer | Action | Date |
|---|---|---|
| **Faculty Preparer:** | | |
| *Tony Esposito* | *Faculty Preparer* | *Apr 03, 2020* |
| **Department Chair/Area Director:** | | |
| *Marilyn Donham* | *Recommend Approval* | *Apr 06, 2020* |
| **Dean:** | | |
| *Jimmie Baber* | *Recommend Approval* | *Apr 13, 2020* |
| **Curriculum Committee Chair:** | | |
| *Lisa Veasey* | *Recommend Approval* | *Apr 23, 2020* |
| **Assessment Committee Chair:** | | |
| *Shawn Deron* | *Recommend Approval* | *Apr 28, 2020* |
| **Vice President for Instruction:** | | |
| *Kimberly Hurns* | *Approve* | *May 05, 2020* |