

Washtenaw Community College Comprehensive Report

UAT 192 DfMA and Modular Construction (UA 3110)

Effective Term: Spring/Summer 2023

Course Cover

College: Advanced Technologies and Public Service Careers

Division: Advanced Technologies and Public Service Careers

Department: United Association Department

Discipline: United Association Training

Course Number: 192

Org Number: 28200

Full Course Title: DfMA and Modular Construction (UA 3110)

Transcript Title: DfMA & Modular Constrn (3110)

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: Spring/Summer 2023

Course Description: In this course, students will explore Design for Manufacture and Assembly (DfMA) workflows and methods as they apply to mechanical and plumbing piping installations. Current modular and automated assembly techniques and new piping technologies will be reviewed. Automation software, modular piping assemblies and automated tools will be utilized and demonstrated using the United Association (UA) Fabrication Freight Container trainers. DfMA integration with virtual design and construction workflows with the use of industry-standard software tools will be demonstrated. 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. Identify the automation and modular assembly principles associated with the DfMA construction fabrication process.

Assessment 1

Assessment Tool: Outcome-related quiz

Assessment Date: Spring/Summer 2023

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

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 BIM 360, Revit and Navisworks for DfMA production and workforce training.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Spring/Summer 2023

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. Identify DfMA training techniques for the prefabrication of modular assemblies.

Assessment 1

Assessment Tool: Outcome-related quiz

Assessment Date: Spring/Summer 2023

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

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. Demonstrate the ability to train personnel performing DfMA and modular assembly fabrication for construction.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Spring/Summer 2023

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

Course Objectives

1. Discuss developing technologies and their impact in the construction industry.
2. Discuss the key factors of utilizing DfMA for construction projects.
3. Demonstrate the process of using DfMA for the pipe trades.
4. Review the history and process of Computer-Aided Design (CAD) and Building Information Modeling (BIM).
5. Explain the distinction between the various BIM processes including Revit and Navisworks.
6. Review the history of DfMA.
7. Discuss DfMA terminology.
8. Discuss the history of blueprints and construction design.
9. Compare and contrast the benefits of CAD, BIM, Navisworks, and DfMA.
10. Demonstrate DfMA process using provided training modules.
11. Discuss current and future trends in design automation.
12. Review ways to teach and demonstrate design automation in a classroom environment.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Tony Esposito</i>	<i>Faculty Preparer</i>	<i>Mar 24, 2023</i>
Department Chair/Area Director: <i>Marilyn Donham</i>	<i>Recommend Approval</i>	<i>Mar 28, 2023</i>
Dean: <i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>Mar 28, 2023</i>
Curriculum Committee Chair: <i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>May 04, 2023</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>May 11, 2023</i>
Vice President for Instruction: <i>Victor Vega</i>	<i>Approve</i>	<i>May 12, 2023</i>