

Washtenaw Community College Comprehensive Report

UAT 370 Heat Fusion Joining of Thermoplastic Pipe (UA 5018) Effective Term: Fall 2024

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: 370

Org Number: 28200

Full Course Title: Heat Fusion Joining of Thermoplastic Pipe (UA 5018)

Transcript Title: Heat Fusion Joining (UA 5018)

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 2024

Course Description: In this course, students will explore the theory, applications, and procedures for heat fusion for joining polypropylene pipe (PP) using Aquatherm piping. Classroom and hands-on activities include joining pipes with an emphasis on fusion setup procedures, operation, and equipment. Upon successful completion of this course, students will be certified by McElroy and Aquatherm as trainers in the processes demonstrated through their established guidelines. Limited to United Association Instructor Training program graduates.

Course Credit Hours

Variable hours: No

Credits: 3

Lecture Hours: Instructor: 45 **Student:** 45

The following Lab fields are not divisible by 15: Student Min, Instructor Min

Lab: Instructor: 3 **Student:** 3

Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 48 **Student:** 48

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 the equipment setup and operation to satisfactorily complete a "Butt fusion" joint on a small diameter PP pipe using McElroy hydraulic fusion equipment.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: 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 equipment setup and operation to satisfactorily complete a PP "Outlet fusion" joint using McElroy Hornet equipment.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: 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 equipment setup and operation to satisfactorily complete a "Socket fusion" joint on PP using McElroy socket fusion equipment.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: 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. Demonstrate the equipment setup and operation to satisfactorily complete an "Electrofusion" joint using Central Electrofusion equipment.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: 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

5. Demonstrate the equipment setup and operation to satisfactorily complete a "Hot-tap" using McElroy Hornet equipment.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: 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

6. Demonstrate the proper equipment setup and operation of the McElroy DataLogger.

Assessment 1

Assessment Tool: Outcome-related demonstration

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: 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 the setup and sequence of operation for "Butt Fusion" welding process using the McElroy Hydraulic Fusion machine.
2. Identify and demonstrate the setup and sequence of operation for "Outlet Fusion" welding process using the McElroy Hornet Fusion machine.
3. Identify and demonstrate the setup and sequence of operation for "Socket Fusion" welding process using the McElroy Socket Fusion machine.
4. Identify and demonstrate the setup and sequence of operation for "Electrofusion" welding process using the and Central Electrofusion machine.
5. Identify and demonstrate the setup and sequence of operation for "Hot Tap" welding process using the McElroy Hornet Fusion machine.
6. Identify the characteristics of fusion joints and the acceptable levels and limits of the different types of joints: butt fusion, outlet fusion joint, socket fusion joint, electrofusion joint, hot tap.
7. Review and discuss safety requirements and personal protective equipment (PPE) when working with each type of heat fusion joining equipment.
8. Identify the environmental and climate conditions that affect the fusion process.
9. Review, discuss, and demonstrate the clean-up, storage, and maintenance of the McElroy fusion equipment.
10. Discuss the history of transporting fluids through underground piping systems.
11. Describe the impact of fluid chemical reactions on the composition of pipes in underground systems.
12. Describe the environmental and topographical risks involved in underground piping systems and the ways to mitigate them.
13. Identify the purpose, use, and sequence of operation of the McElroy DataLogger.
14. Discuss the data and information captured by the McElroy DataLogger during the fusion operation process.

15. Review and discuss the safety requirements and personal protective equipment (PPE) when working with the DataLogger.
16. Discuss and compare pipe joining methods used in underground piping systems.
17. Discuss the types and characteristics of fluids distributed through the underground piping systems.
18. Compare and contrast other current fusion welding process methods available in the industry.
19. Discuss common mistakes and defects that occur when using the fusion equipment and the methods to stop, limit, or mitigate them.

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>Feb 02, 2024</i>
Department Chair/Area Director: <i>Marilyn Donham</i>	<i>Recommend Approval</i>	<i>Feb 05, 2024</i>
Dean: <i>Eva Samulski</i>	<i>Recommend Approval</i>	<i>Feb 18, 2024</i>
Curriculum Committee Chair: <i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>May 17, 2024</i>
Assessment Committee Chair: <i>Jessica Hale</i>	<i>Recommend Approval</i>	<i>May 20, 2024</i>
Vice President for Instruction: <i>Brandon Tucker</i>	<i>Approve</i>	<i>May 30, 2024</i>