

Washtenaw Community College Comprehensive Report

UAT 220 Methods in Teaching Pipe Trades Mathematics

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: 220

Org Number: 28200

Full Course Title: Methods in Teaching Pipe Trades Mathematics

Transcript Title: Pipe Trade Mathematics

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: There have been updates to current methods involved in teaching trade mathematics, including the LMS and online resources.

Proposed Start Semester: Spring/Summer 2025

Course Description: In this course, students will develop methods and techniques for teaching pipe trades math for apprentices and journey workers at their local Training Centers. Students will be introduced to various teaching styles, testing and exams, as well as developing math curriculum using an online learning management system (LMS). Students will use algebra and trigonometry, applying both U.S. Standard and Metric measurements. They will also review topics such as offsets and the properties of a right triangle, calculated by hand and using trade-specific calculators. 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. Analyze and identify techniques for teaching Trade Mathematics.

Assessment 1

Assessment Tool: Outcome-related essay questions

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: Departmentally-developed 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

2. Identify offsets and trigonometric properties and their applications to Pipe Trades Mathematics by hand and using the Pipe Trades Pro calculator.

Assessment 1

Assessment Tool: Outcome-related written exam questions

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: 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

3. Demonstrate access to United Association Online Learning Resource (UAOLR) and other online math resource activities to download to the LMS.

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: 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. Demonstrate trade-related functions of the Pipe Trades Pro Calculator.

Assessment 1

Assessment Tool: Outcome-related worksheets

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: 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

Course Objectives

1. Compare and contrast successful teaching strategies for Trade Math.
2. Recognize the features of effective lesson plans.
3. Identify the elements of effective teaching styles.
4. Discuss and apply dimensional and conversion functions of the Pipe Trades Pro Calculator.
5. Discuss previous techniques for teaching trade math.
6. Practice run, travel, and rolling offset functions using trigonometry.
7. Demonstrate use of quick keys to solve offset problems.
8. Utilize an LMS portal to create a course.
9. Utilize the United Association Online Learning Resource (UAOLR) for math resources.
10. Implement engaging trade math activities for the classroom.
11. Practice run, offset and travel functions of the Pipe Trades Pro Calculator.
12. Review and complete trade math worksheets.
13. Solve for basic, construction-related trigonometric functions by hand and using a calculator.

New Resources for Course

Course Textbooks/Resources

Textbooks

International Association of Plumbing and Mechanical Officials. *Related Mathematics*, 5th ed. IAPMO Group, 2017

Manuals

Periodicals

Software

Equipment/Facilities

Level I classroom

| <u>Reviewer</u> | <u>Action</u> | <u>Date</u> |
|---|---------------------------|---------------------|
| Faculty Preparer: <i>Tony Esposito</i> | <i>Faculty Preparer</i> | <i>Jan 21, 2025</i> |
| Department Chair/Area Director: <i>Marilyn Donham</i> | <i>Recommend Approval</i> | <i>Jan 28, 2025</i> |
| Dean: <i>Eva Samulski</i> | <i>Recommend Approval</i> | <i>Jan 28, 2025</i> |
| Curriculum Committee Chair: <i>Randy Van Wagnen</i> | <i>Recommend Approval</i> | <i>Apr 24, 2025</i> |
| Assessment Committee Chair: <i>Jessica Hale</i> | <i>Recommend Approval</i> | <i>Apr 26, 2025</i> |
| Vice President for Instruction: <i>Brandon Tucker</i> | <i>Approve</i> | <i>Apr 28, 2025</i> |

Washtenaw Community College Comprehensive Report

UAT 220 Pipe Trades Applied Mathematics Effective Term: Fall 2020

Course Cover

Division: Advanced Technologies and Public Service Careers

Department: United Association Department

Discipline: United Association Training

Course Number: 220

Org Number: 28200

Full Course Title: Pipe Trades Applied Mathematics

Transcript Title: Pipe Trade Applied Mathematics

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog

Reason for Submission: Course Change

Change Information:

Consultation with all departments affected by this course is required.

Course description

Outcomes/Assessment

Objectives/Evaluation

Rationale: Update U.A. course

Proposed Start Semester: Fall 2020

Course Description: In this course, students will develop methods and techniques for teaching pipe trades math for apprentices and journey workers at their local Training Centers. Students will be introduced to various teaching styles, testing and exams, as well as developing math curriculum using an online learning management system (LMS) such as Blackboard™. An emphasis will be placed on algebra and trigonometry related to the pipe trade using U.S. Standard and Metric measurements, calculated by hand, and calculated using a trade-specific calculator or application. 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. Analyze and identify techniques for teaching Trade Mathematics.

Assessment 1

Assessment Tool: Essay questions

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: Departmentally-developed 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

2. Identify algebra and trigonometric properties and their applications to Pipe Trades Mathematics by hand and using the Pipe Trades Pro calculator.

Assessment 1

Assessment Tool: Outcome-related written exam questions

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: 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

3. Prepare and present lesson plan using Blackboard and online math resources.

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. Identify the six-step method of trade teaching.
2. Recognize the features of good lesson plans and elements of effective teaching styles.
3. Explain how to use a Pipe Trades Pro Calculator.
4. Discuss previous techniques for teaching trade math.

5. Compare and contrast previous teaching methods with new teaching methods.
6. Discuss engaging trade math activities for the classroom.
7. Discuss and apply dimensional and conversion functions.
8. Review and practice run, travel, and offset functions through trigonometry.
9. Complete trade math worksheets.
10. Use trigonometric functions to solve for an unknown.
11. Demonstrate use of quick keys to solve offset problems.
12. Label parts of rolling offset and calculate dimensions using algebra and trigonometry functions.
13. Open the Blackboard portal and create a course.
14. Access and utilize the United Association Online Learning Resource (UAOLR) for math resources.
15. Prepare and present a five-minute lesson plan to demonstrate teaching methods.

New Resources for Course

Course Textbooks/Resources

Textbooks

International Association of Plumbing and Mechanical Officials. *Related Mathematics*, 5th ed. IAPMO Group, 2017

Manuals

Periodicals

Software

Equipment/Facilities

Level I classroom

| <u>Reviewer</u> | <u>Action</u> | <u>Date</u> |
|---|---------------------------|---------------------|
| Faculty Preparer: <i>Tony Esposito</i> | <i>Faculty Preparer</i> | <i>Apr 22, 2020</i> |
| Department Chair/Area Director: <i>Marilyn Donham</i> | <i>Recommend Approval</i> | <i>Apr 28, 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>Jul 23, 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> |