

Washtenaw Community College Comprehensive Report

UAT 354 Quality Control Management (UA 8040)

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: 354

Org Number: 28200

Full Course Title: Quality Control Management (UA 8040)

Transcript Title: Quality Control Mngmt (8040)

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 description

Outcomes/Assessment

Objectives/Evaluation

Rationale: Course updates to assessments and objectives reflect current trends and technology in the industry.

Proposed Start Semester: Spring/Summer 2025

Course Description: In this course, students will identify the quality control requirements of the American Society of Mechanical Engineers (ASME), the National Board of Boiler and Pressure Vessel Inspectors (NBBI), and the American Welding Society (AWS) as they apply to boiler piping systems and equipment. Students will recognize boiler and pressure vessel codes, along with the required piping standards for quality assurance of the pressure integrity of piping systems. In addition, students will identify and demonstrate the proper documentation of quality control programs and verification of code compliance in the inspection process. Limited to United Association Instructor Training Program graduates.

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. Recognize the policies, scope, inter-relationships, and jurisdiction of the ASME and the NBBI.

Assessment 1

Assessment Tool: Outcome-related 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

2. Recognize the established rules, applications, certifications and boundary limits of codes and standards for pressure integrity in the construction of boilers, pressure vessels and attached piping systems.

Assessment 1

Assessment Tool: Outcome-related 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. Identify the responsibilities and verification duties to affirm compliance requirements focusing on welding, non-destructive examination (NDE), and material verification.

Assessment 1

Assessment Tool: Outcome-related 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

4. Recognize the process for a company to obtain an ASME Certificate of Authorization based on type and the scope of work performed.

Assessment 1

Assessment Tool: Outcome-related 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

Course Objectives

1. Review the history and development of the ASME, the AWS, the NBBI, and the International Association of Plumbing and Mechanical Officials (IAPMO).
2. Examine the scope and purpose of the codes and standards published by ASME, AWS, NBBI, and IAMPO.
3. Identify the jurisdiction and legalities involved with non-compliance of regulations and codes.
4. Discuss the parameters and limits of metal stress and fatigue, pressure integrity, and design criteria identified in the standards and codes for boiler piping systems.
5. Evaluate material and component strength with applicable safety factors within a piping system.
6. Evaluate equipment life cycle and piping fatigue integrity of piping systems over time.
7. Identify the quality assurance activities delineated by the rules and application of a code or standard.
8. Review AWS Quality Control 1 (QC1) Standard for AWS Certification of Welding Inspectors, ASME Quality Assurance-1 (QA-1) qualifications for authorized inspectors and ASME B31.1 Power Piping Code qualifications for the owner's inspector.
9. Identify the professional duties and responsibilities of all inspection personnel along with the required documentation compliance for controlled material joining processes.
10. Review ASME BPVC (Boiler Pressure Vessel Code) Section IX - Welding, Brazing, and Fusing qualifications procedures.
11. Review the procedures and personnel qualifications for B31 Pressure Piping NDE methods mandated in ASME BPVC Section V NDE.
12. List the required documentation for compliance with regulations and code standards for the supervision and control of components and material joining processes.
13. Identify the requirements of the applicable ASME stamps with the proper code designator.
14. Discuss common quality control issues and identify the relevant section in the quality control manual.

New Resources for Course

Course Textbooks/Resources

Textbooks

Robert A. Lee. *IPT's Pipe Trades Handbook*, ed. IPT Publishing, 2006, ISBN: 0920855180.

James F. Lincoln. *Metals and How to Weld Them*, ed. Lincoln Arc Welding, 1962, ISBN: 0-937390-10-.

Manuals

Periodicals

Software

Equipment/Facilities

Reviewer

Faculty Preparer:

Tony Esposito

Action

Faculty Preparer

Date

Jan 28, 2025

Department Chair/Area Director:

<i>Marilyn Donham</i>	<i>Recommend Approval</i>	<i>Jan 30, 2025</i>
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Dean:

<i>Eva Samulski</i>	<i>Recommend Approval</i>	<i>Jan 30, 2025</i>
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Curriculum Committee Chair:

<i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>Jun 04, 2025</i>
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Assessment Committee Chair:

<i>Jessica Hale</i>	<i>Recommend Approval</i>	<i>Jun 09, 2025</i>
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Vice President for Instruction:

<i>Brandon Tucker</i>	<i>Approve</i>	<i>Jun 10, 2025</i>
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Washtenaw Community College Comprehensive Report

UAT 354 Quality Control Management (UA 8040)

Effective Term: Winter 2022

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: 354

Org Number: 28200

Full Course Title: Quality Control Management (UA 8040)

Transcript Title: Quality Control Mngmt (8040)

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: Winter 2022

Course Description: In this course, students will identify the quality control requirements of the American Society of Mechanical Engineers (ASME), the National Board of Boiler and Pressure Vessel Inspectors (NBBI), and the American Welding Society (AWS) as they apply to boiler piping systems and equipment. Students will recognize boiler and pressure vessel codes, along with the required piping standards for quality assurance of the pressure integrity of piping systems. In addition, students will identify and demonstrate the proper documentation of quality control programs and verification of code compliance in the inspection process. Limited to United Association Instructor Training program graduates.

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. Recognize the policies, scope, inter-relationships, and jurisdiction of ASME and National Board of Boiler and Pressure Vessel Inspectors.

Assessment 1

Assessment Tool: Outcome-related exam questions

Assessment Date: Fall 2022

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. Recognize the established rules, applications, certifications and boundary limits of codes and standards for pressure integrity in the construction of boilers, pressure vessels and attached piping systems.

Assessment 1

Assessment Tool: Outcome-related exam questions

Assessment Date: Fall 2022

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 the responsibilities and verification duties to affirm compliance requirements focusing on welding, non-destructive examination (NDE) and material verification, including the personal protective equipment (PPE) required.

Assessment 1

Assessment Tool: Demonstration

Assessment Date: Fall 2022

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

4. Recognize the process for a Company to obtain an ASME Certificate of Authorization based on type and the scope of work performed.

Assessment 1

Assessment Tool: Outcome-related exam questions

Assessment Date: Fall 2022

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Rubric and 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. Review the history and development of the ASME, American Welding Society (AWS), National Board of Boiler and Pressure Vessel Inspectors (NBBI), and the International Association of Plumbing and Mechanical Officials (IAPMO).
2. Examine the scope and purpose of the codes and standards published by ASME, AWS, NBBI, and IAMPO.
3. Identify the jurisdiction and legalities involved with non-compliance of regulations and codes.
4. Discuss the parameters and limits of metal stress and fatigue, pressure integrity, and design criteria identified in the standards and codes for boiler piping systems.
5. Evaluate material and component strength with applicable safety factors within a piping system.
6. Evaluate equipment life cycle and piping fatigue integrity of piping systems over time.
7. Identify the quality assurance activities delineated by the rules and application of a code or standard.
8. Review AWS QC1 Standard for AWS Certification of Welding Inspectors, ASME QA-1 qualifications for authorized inspectors and ASME B31.1 Power Piping Code qualifications for the owner's inspector.
9. Identify the professional duties and responsibilities of all inspection personnel along with the required documentation compliance for controlled material joining processes.
10. Review ASME BPVC (Boiler Pressure Vessel Code) Section IX - Welding, Brazing, and Fusing qualifications procedures.
11. Review the procedures and personnel qualifications for B31 Pressure Piping NDE methods mandated in ASME BPVC Section V - Non-Destructive Examination.
12. List the required documentation for compliance with regulations and code standards for the supervision and control of components and material joining processes.
13. Identify the requirements of the applicable ASME stamps with the proper code designator.
14. Discuss common quality control issues and identify the relevant section in the quality control manual.
15. Identify personal protective equipment (PPE) and procedures based on work activity.

New Resources for Course

Course Textbooks/Resources

Textbooks

Robert A. Lee. *IPT's Pipe Trades Handbook*, ed. IPT Publishing, 2006, ISBN: 0920855180.

James F. Lincoln. *Metals and How to Weld Them*, ed. Lincoln Arc Welding, 1962, ISBN: 0-937390-10-.

Manuals

Periodicals

Software

Equipment/Facilities

Reviewer

Action

Date

Faculty Preparer:

Tony Esposito

Faculty Preparer

Oct 06, 2021

Department Chair/Area Director:

<i>Marilyn Donham</i>	<i>Recommend Approval</i>	<i>Oct 08, 2021</i>
Dean:		
<i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>Oct 11, 2021</i>
Curriculum Committee Chair:		
<i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>Dec 01, 2021</i>
Assessment Committee Chair:		
<i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Dec 02, 2021</i>
Vice President for Instruction:		
<i>Kimberly Hurns</i>	<i>Approve</i>	<i>Dec 08, 2021</i>