Washtenaw Community College Comprehensive Report

WAF 231 Gas Tungsten Arc Welding (GTAW)
Effective Term: Spring/Summer 2022

Course Cover

College: Advanced Technologies and Public Service Careers
Division: Advanced Technologies and Public Service Careers
Department: Welding and Fabrication
Discipline: Welding and Fabrication
Course Number: 231
Org Number: 14600
Full Course Title: Gas Tungsten Arc Welding (GTAW)
Transcript Title: Gas Tungsten Arc Welding-GTAW
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:
Consultation with all departments affected by this course is required.
Outcomes/Assessment
Rationale: Three-year syllabus review
Proposed Start Semester: Fall 2022
Course Description: In this course, students will further enhance their Gas Tungsten Arc Welding (GTAW) skills by performing advanced welding techniques most commonly used in the aerospace, manufacturing and automotive industries. Materials, such as, carbon steel, aluminum, stainless steel, copper and cast iron will be used. Multiple passes will be required using positions such as 2F/G, 3F/G, 4F/G, 5F/G, 6F/G on sheet, plate and pipe. Students will apply filler metal classification and specifications, codes and standards set forth by the American Welding Society (AWS).

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 30 **Student:** 30
Lab: Instructor: 90 **Student:** 90
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 120 **Student:** 120
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

Level 1

Requisites

Prerequisite
WAF 125 minimum grade "C"

General Education

Request Course Transfer

Proposed For:
Ferris State University
Other : Pennsylvania College of Technology

Student Learning Outcomes

1. Perform surface, groove, tee, lap, corner and edge welds in the flat, horizontal, vertical and overhead positions on plate.
   Assessment 1
   Assessment Tool: Outcome-related welded samples
   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: The welds will be scored as pass or fail in accordance with applicable AWS welding codes.
   Standard of success to be used for this assessment: 80% of students will create passing welds in accordance with AWS welding codes.
   Who will score and analyze the data: Departmental faculty

2. Perform welds on carbon steel, stainless steel and aluminum on pipe or tube in the 2F/G, 5F/G and 6F/G positions using the GTAW process.
   Assessment 1
   Assessment Tool: Outcome-related welded samples
   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: The welds will be scored as pass or fail in accordance with applicable AWS welding codes.
   Standard of success to be used for this assessment: 80% of students will create passing welds in accordance with AWS welding codes.
   Who will score and analyze the data: Departmental faculty

3. Perform a corner, groove and tee weld on cast iron and copper in the horizontal and vertical positions.
   Assessment 1
   Assessment Tool: Outcome-related welded samples
   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: The welds will be scored as pass or fail in accordance with applicable AWS welding codes.
   Standard of success to be used for this assessment: 80% of students will create passing welds in accordance with AWS welding codes.
   Who will score and analyze the data: Departmental faculty

4. Identify both practical and theoretical aspects of the Gas Tungsten Arc Welding process.

Assessment 1

Assessment Tool: Outcome-related test 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: Departmental faculty

Course Objectives

1. Inspect work area and welding equipment for any safety hazards prior to welding.
2. Select correct welding gas and filler wire for base material being welded.
3. Properly set up the welding machine to weld carbon steel, stainless steel, copper, cast iron and aluminum.
4. Perform surfacing (pad) welds on carbon steel, stainless steel and aluminum in the flat, horizontal, vertical and overhead positions on plate.
5. Weld a groove, tee, lap, corner and edge weld in the flat, horizontal, vertical and overhead positions on carbon steel, stainless steel, and aluminum sheet metal.
6. Weld carbon steel, stainless steel and aluminum pipe or tube in the 2F/G, 5F/G and 6F/G positions.
7. Weld a corner, groove and tee joint on cast iron and copper in the horizontal and vertical positions.
8. Run a bead using a cross hatching technique with hard surfacing filler material on carbon steel plate.
9. Weld a plate, pipe or tube, in any position in accordance with a Weld Procedure Specification (WPS) to achieve certification.
10. Discuss the practical uses of GTAW.
11. Identify appropriate applications for GTAW.
12. Recognize the advantages and disadvantages of GTAW based on the material or application.

New Resources for Course

Course Textbooks/Resources

Textbooks

Hoffman . *Welding: Second Custom Edition for Washtenaw Community College*, 2 ed. Pearson , 2017, ISBN: 9781323508350.

Manuals
Periodicals
Software

Equipment/Facilities

Level III classroom

Reviewer	Action	Date
Faculty Preparer:		
Alexander Pazkowski	*Faculty Preparer*	*Aug 13, 2021*
Department Chair/Area Director:		
Bradley Clink	*Recommend Approval*	*Aug 16, 2021*
Dean:		
Jimmie Baber	*Recommend Approval*	*Aug 19, 2021*
Curriculum Committee Chair:		
Randy Van Wagnen	*Recommend Approval*	*Dec 07, 2021*
Assessment Committee Chair:		

Shawn Deron	*Recommend Approval*	*Dec 08, 2021*

Vice President for Instruction:

Kimberly Hurns	*Approve*	*Dec 08, 2021*

Washtenaw Community College Comprehensive Report

WAF 231 Gas Tungsten Arc Welding (GTAW)
Effective Term: Fall 2016

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Welding and Fabrication
Discipline: Welding and Fabrication
Course Number: 231
Org Number: 14600
Full Course Title: Gas Tungsten Arc Welding (GTAW)
Transcript Title: Gas Tungsten Arc Welding-GTAW
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:
Course discipline code & number
Course title
Course description
Outcomes/Assessment
Objectives/Evaluation
Other:
Rationale: Updating course to meet new program requirements.
Proposed Start Semester: Fall 2016
Course Description: In this course, students further enhance their Gas Tungsten Arc Welding (GTAW) skills by performing advanced welding techniques most commonly used in the aerospace, manufacturing and automotive industries. Materials, such as, carbon steel, aluminum, stainless steel, copper and cast iron will be used. Multiple passes will be required using positions such as 2F/G, 3F/G, 4F/G, 5F/G, 6F/G on sheet, plate and pipe. Students will apply filler metal classification and specifications, codes and standards set forth by the American Welding Society (AWS). This course contains material previously taught in WAF 215.

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 30 **Student:** 30
Lab: Instructor: 90 **Student:** 90
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 120 **Student:** 120
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

Level 1

Requisites

Prerequisite

WAF 125 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Ferris State University
Other : Pennsylvania College of Technology

Student Learning Outcomes

1. Perform surface, groove, tee, lap, corner and edge welds in the flat, horizontal, vertical and overhead positions on plate.
   Assessment 1
   Assessment Tool: Welded samples
   Assessment Date: Fall 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: The welds will be scored as pass or fail in accordance with applicable AWS welding codes.
   Standard of success to be used for this assessment: 80% of students will create passing welds in accordance with AWS welding codes.
   Who will score and analyze the data: Departmental faculty

2. Perform welds on carbon steel, stainless steel and aluminum on pipe or tube in the 2F/G, 5F/G and 6F/G positions using the GTAW process.
   Assessment 1
   Assessment Tool: Welded samples
   Assessment Date: Fall 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: The welds will be scored as pass or fail in accordance with applicable AWS welding codes.
   Standard of success to be used for this assessment: 80% of students will create passing welds in accordance with AWS welding codes.
   Who will score and analyze the data: Departmental faculty

3. Perform a corner, groove and tee weld on cast iron and copper in the horizontal and vertical positions.
   Assessment 1
   Assessment Tool: Welded Samples
   Assessment Date: Fall 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: The welds will be scored as pass or fail in accordance with applicable AWS welding codes.
   Standard of success to be used for this assessment: 80% of students will create passing welds in accordance with AWS welding codes.
   Who will score and analyze the data: Departmental faculty

Course Objectives

1. Inspect work area and welding equipment for any safety hazards prior to welding.

2. Select correct welding gas and filler wire for base material being welded.
3. Properly set up the welding machine to weld carbon steel, stainless steel, copper, cast iron and aluminum.
4. Perform surfacing (pad) welds on carbon steel, stainless steel and aluminum in the flat, horizontal, vertical and overhead positions on plate.
5. Weld a groove, tee, lap, corner and edge weld in the flat, horizontal, vertical and overhead positions on carbon steel, stainless steel, and aluminum sheet metal.
6. Weld carbon steel, stainless steel and aluminum pipe or tube in the 2F/G, 5F/G and 6F/G positions.
7. Weld a corner, groove and tee joint on cast iron and copper in the horizontal and vertical positions.
8. Run a bead using a cross hatching technique with hard surfacing filler material on carbon steel plate.
9. Weld a plate, pipe or tube, in any position in accordance with a Weld Procedure Specification (WPS) to achieve certification.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Level III classroom

Reviewer	Action	Date
Faculty Preparer:		
Amanda Scheffler	*Faculty Preparer*	*Aug 30, 2015*
Department Chair/Area Director:		
Glenn Kay II	*Recommend Approval*	*Aug 30, 2015*
Dean:		
Brandon Tucker	*Recommend Approval*	*Oct 06, 2015*
Curriculum Committee Chair:		
Kelley Gottschang	*Recommend Approval*	*Dec 07, 2015*
Assessment Committee Chair:		
Michelle Garey	*Recommend Approval*	*Dec 10, 2015*
Vice President for Instruction:		
Michael Nealon	*Approve*	*Dec 14, 2015*