



## **DC Course Syllabus**

**Term: 2021-2022**

### **A.K. Smith Career Center Ivy Tech Community College**

#### **Course Information:**

**High School Course Title & DOE #: Gas Welding Processes, 7101 HS Credits: 1.0**

**Ivy Tech Course Title and number): Advanced Gas Metal Arc (MIG) Welding, WELD 272**

**Ivy Tech Credits: 3.0**

**School:** Advanced Manufacturing, Engineering, and Applied Science

**Program:** Industrial Technology

**Contact Hours:** Lecture: 1 Lab: 4

**Length of Course:** 1 year

**Semester Registered:** Full-Year Class (Aug 2020 to May 2021)

#### **High School Faculty Information –**

**Name:** Ken Tinzie

**Phone Number:** 219-873-2120 ext. 8711

**Email (Ivy Tech email):** ktinzie01@mcas.k12.in.us

**Office/Campus Location:** AK Smith Career Center

817 Lafayette Street Michigan City, Indiana 46360

**Office Hours: 7:25am- 2:25pm**

**COURSE TITLE:** Advanced Gas Metal Arc Welding

**COURSE NUMBER:** WELD 272

**PREREQUISITES/CO-REQUISITES:** WELD 207 Gas Metal Arc (MIG) Welding.

**SCHOOL:** Advanced Manufacturing, Engineering, & Applied Science

**PROGRAM:** Industrial Technology

**CREDIT HOURS:** 3

**CONTACT HOURS:** Lecture: 1 Lab: 4

**DATE OF LAST REVISION:** Spring, 2019

**EFFECTIVE DATE OF THIS REVISION:** Fall, 2019

**CATALOG DESCRIPTION:** Provides advanced skills and fundamental knowledge in Gas Metal Arc Welding. This course is designed for intermediate to advanced welders, and fabricators and those seeking welder certification. Emphasizes safe practices in Gas Metal Arc Welding. In addition, this course will prepare students to take nationally recognized certification exam(s).

**MAJOR COURSE LEARNING OBJECTIVES:** Upon successful completion of this course the student will be expected to:

1. Demonstrate the proper safety procedures in Gas Metal Arc welding. [e,f]
2. Learn proper AWS Standard Welding Terms and Definition. [e,f]
3. Perform weld restarts that are smooth and even with GMAW using short circuiting transfer equipment on mild steel. [e,f]
4. Perform lap, and tee joint welds with GMAW using short circuiting transfer equipment on mild steel in the vertical up, vertical down and overhead position. [e,f]
5. Perform square groove welds with GMAW using short circuiting transfer equipment on mild steel in the vertical up, vertical down and overhead position. [e,f]
6. Perform lap, and tee joint welds with GMAW using spray equipment on thick mild steel in the flat and horizontal position. [e,f]
7. Perform V-Groove welds with GMAW using spray equipment on thick mild steel in the flat position. [e,f]
8. Perform lap, tee and groove welds with GMAW equipment on aluminum. [e,f]
9. Understand welding procedure specifications (WPS) and be able to follow them. [e,f]
10. Understand the basic metallurgical properties of steel and aluminum and how they are affected by welding. [e,f]
11. Understand the significance of the suffix in GMAW electrode selection. [e,f]
12. Prepare to create a workmanship sample weldment for GMAW following the AWS provided prints. (those samples meeting AWS standards can be used for AWS SENSE certification). [e,f]
13. Gain insight into the Certification for AWS welders. [e,f]
14. Attain readiness to take American Welding Society certification exam. [e,f]
15. Demonstrate ability to read and interpret technical documents. [b,e]
16. Demonstrate ability to use various types of software applicable to course. [a]

Note: Letters following objectives correspond to ATMAE Outcomes

(Note: All performance welds should meet AWS D1.1 Standards or AWS EG2.0 Standards.)

\*The actual objectives covered during the semester may vary slightly from the above.

**COURSE CONTENT:** Topical areas of study include –

NCGA (National Cylinder Gas Association)  
Code

Safety Devices

Color Codes

Check Valve devices

AWS (American Welding Society) filler  
material code

## **Required Text and Materials:**

Welding Fundamentals, Fifth Edition Goodheart-Wilcox

ISBN# 978-63126-328-6

## **ADA Statement**

Ivy Tech Community College seeks to provide reasonable accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, please contact the Office of Disability Support Services.

If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classroom.

## **Code of Student Rights and Responsibilities:**

Students can review their rights and responsibilities as an Ivy Tech Community College dual credit student here: <https://www.ivytech.edu/studentcode/index.html>

## **Attendance Policy –**

Students are expected to attend and participate regularly in class meetings, online learning activities, and other activities assigned as a part of a course of instruction. Faculty are required to report student participation in compliance with institutional policies and federal financial aid guidelines. Faculty and staff shall be sensitive to students' religious beliefs and observances including an expectation that instructors make reasonable arrangements when a student must miss an exam or other academic exercise due to their religious observance. When notified in advance, and when possible, faculty will make allowances for students to make up missed work.

**Methods of Evaluation:** *Students will be evaluated on assignments (20%), assessments (20%), projects and presentations (20%), labs (20%) and workplace ethics (20%).*

**Late/Make-up policy:** Per the Michigan City Area Schools Handbook policy, "It is the student's responsibility to gather, complete, and return classroom assignments in a timely manner upon return to school to his/her respective teacher(s). A student **has the same number of days to make up classroom assignments as the number of days he/she was absent from school.** If a student is absent for an extended period of time, the parent/legal guardian may contact the student's teacher and request information pertaining to homework assignments. Please allow at least 24 hrs for homework to be provided."

## **Grading Scale:**

<b>A.K. Smith Welding Grading Scale</b>		<b>WELD grade scale</b>	
<b>Letter Grade</b>	<b>Percentage</b>	<b>Letter Grade</b>	<b>Percentage</b>
A	90 - 100%	A	90 - 100%
B	80 - 89%	B	80 - 89%
C	70 - 79%	C	70 - 79%
D	60 - 69%	D	60 - 69%
F	< 59.5%	F	< 59.5%

**Accessing Grades:** Course grades are available for students by logging into Ivy Tech's online student system called, [MyIvy](https://myivy.ivytech.edu/), at the following address: <https://myivy.ivytech.edu/>. Ivy Tech will not distribute grades by mail, you will need to look up your grades in your MyIvy account. There may be a waiting period of 30 days from the end of the high school semester to obtain grades through MyIvy. If you'd like to order an official transcript, check your unofficial transcript first and the order your official Ivy Tech transcript through MyIvy by taking the following steps:

Step 1: Login into your MyIvy account ([myivy.ivytech.edu](https://myivy.ivytech.edu/))

Step 2: Select "**Student**" on the left hand side.

Step 3: Select "**Course Info**"

Step 4: Then select "**Request Official Transcripts**"

If you no longer have access to MyIvy because you have not attended in two or more years, click here

([https://exchange.parchment.com/send/adds/index.php?main\\_page=login&s\\_id=9Su8AzIbYotFXfOT](https://exchange.parchment.com/send/adds/index.php?main_page=login&s_id=9Su8AzIbYotFXfOT)) to request your transcript online. You will need to **Create an Account with Parchment Exchange** if you haven't already done so. Should you need to reset your password, you will click on "**Forgot Your Password.**"

## **Academic Honesty Statement**

The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement. Cheating on papers, tests or other academic works is a violation of College rules.

No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.

**Copyright Statement -**

Students shall adhere to the laws governing the use of copyrighted materials. They must ensure that their activities comply with fair use and in no way infringe on the copyright or other proprietary rights of others and that the materials used and developed at Ivy Tech Community College contain nothing unlawful, unethical, or libelous and do not constitute any violation of any right of privacy.

**Course Communication -** Students are expected to uphold their responsibilities in terms of appropriate and professional communication with faculty and peers. Please review the ‘Students Rights and Responsibilities’ section of the student handbook (located in MyIvy) and review common netiquette (Internet etiquette) practices, like those found at:  
<http://www.ivytech.edu/online/resources.html>

**Right of Revision**

**The instructor reserves the right to change any statements, policies or scheduling as necessary. Students will be informed promptly of any and all changes.**

### Tentative Course Schedule

<b><u>Class Meeting</u></b>	<b><u>Topic</u></b>	<b><u>Assigned Work</u></b>	<b><u>Work Due and Exams</u></b>
Week 1	Safety in the Welding Shop	Chapter 2 Review syllabus Safety Lecture Proper welding terminology (1, 2)	
Week 2	Safety in the Welding Shop	Chapter 2 Review syllabus Film on safety (1,2)	Quiz: Safety
Week 3	GMAW and FCAW: Equipment and Supplies	Chapter 15 Identify the gases used in gas metal arc welding Perform routine maintenance on equipment Describe constant voltage and wire feed welding processes (2,6,7)	Lab: Safety Setup
Week 4	GMAW and FCAW: Equipment and Supplies	Chapter 15 Identify the gases used in gas metal arc welding Perform routine maintenance on equipment Describe constant voltage and wire feed welding processes (2,6,7)	Quiz: Maintenance of Equipment
Week 5	GMAW and FCAW: Equipment and Supplies	Chapter 15 Identify the gases used in gas metal arc welding Perform routine maintenance on equipment Describe constant voltage and wire feed welding processes (2,6,7)	
Week 6	GMAW and FCAW: Equipment Assembly and Adjustment	Chapter 16 Demonstrate ability to read and interpret technical documents (15)	Lab: Blueprint Creation

Week 7	GMAW and FCAW: Equipment Assembly and Adjustment	Chapter 16 Demonstrate ability to read and interpret technical documents (9,10)	Lab: Blueprint Build out
Week 8	GMAW and FCAW: Flat Welding Position	Chapter 17 Identify and weld (5) basic joints Weld with hard wire using short circuit Weld with flux-core tubular wires Weld aluminum with spray (3,4,5,8)	Quiz: Welding Joints Lab: Create (5) welding joints
Week 9	GMAW and FCAW: Flat Welding Position	Chapter 17 Identify and weld (5) basic joints Weld with hard wire using short circuit Weld with flux-core tubular wires Weld aluminum with spray (3,4,5,8)	Quiz: Welding Joints Lab: Create (5) welding joints
Week 10	GMAW and FCAW: Flat Welding Position	Chapter 17 Identify and weld (5) basic joints Weld with hard wire using short circuit Weld with flux-core tubular wires Weld aluminum with spray (3,4,5,8)	Lab: Create (5) welding joints
Week 11	GMAW and FCAW: Horizontal, Vertical and Overhead Welding Positions	Chapter 18 Weld with hard wire using short circuit Weld with flux-core tubular wires Weld aluminum with spray (3,4,5)	Lab: Weld in all positions
Week 12	GMAW and FCAW: Horizontal, Vertical and Overhead Welding Positions	Chapter 18 Weld with hard wire using short circuit Weld with flux-core tubular wires Weld aluminum with spray	Lab: Weld in all positions

		(3,4,5)	
Week 13	Special Welding and Cutting Processes Inspecting and Testing Welds Welder Certification	Chapter 35 Chapter 36 Chapter 37 Prepare to create a workmanship sample weldment Gain insight into the Certification for AWS Attain readiness to take American Welding Society certification (12,13,14,15,16)	
Week 14	Special Welding and Cutting Processes Inspecting and Testing Welds Welder Certification	Chapter 35 Chapter 36 Chapter 37 Prepare to create a workmanship sample weldment Gain insight into the Certification for AWS Attain readiness to take American Welding Society certification (12,13,14,15,16)	
Week 15	Special Welding and Cutting Processes Inspecting and Testing Welds Welder Certification	Chapter 35 Chapter 36 Chapter 37 Prepare to create a workmanship sample weldment Gain insight into the Certification for AWS Attain readiness to take American Welding Society certification (12,13,14,15,16)	
Week 16		All Projects Due	Final Exam