DC Course Syllabus **Term: 2021-2022**

A.K. Smith Career Center
Ivy Tech Community College

Course Information:

High School Course Title & DOE #: **Advanced Shielded Metal Arc Welding Technology, 7111**

HS Credits: 1.0

Ivy Tech Course Title and number): Advanced Shielded Metal Arc Welding, WELD 206

Ivy Tech Credits: 3.0

School: Advanced Manufacturing, Engineering, and Applied Science

Program: Industrial Technology

Contact Hours: Lecture: 2 Lab: 2

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 Shielded Metal Arc Welding
II COURSE NUMBER: WELD 206
PREREQUISITES/CO-REQUISITES: WELD 108 Shielded Metal Arc Welding I.
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: Covers SMAW welding equipment and products used to produce groove type butt and fillet welds. Provides extensive practice to develop the skills to achieve satisfactory welds of this type. Safety hazards and safe practices in arc welding are emphasized. 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. Describe differences in currents and polarities; AC,DC Reverse and DC Straight. [e,f]
2. Explain how to safely use SMAW equipment. [e,f]
3. Describe the AWS electrode identification system for SMA process. [e,f]
4. Perform fillet welds on 1" plate (21-bead Multi-pass) in horizontal, vertical and overhead positions. [e,f]
5. Describe how to control magnetic arc blow in DC welding of groove welds. [e,f]
6. Prepare and tack groove welds as to AWS D1.1 Structural Steel Code. [e,f]
7. Perform 3/8" and 1" Groove welds as per AWS and ASME Code, in all positions. [e,f]
8. Perform air carbon arc gouging on steel groove welds. [e,f]
9. Describe heat input and metal warpage and distortion. [e,f]
10. Describe methods of destructive and non-destructive testing. [e,f]
11. Attain readiness to take American Welding Society certification exam [e,f]
12. Demonstrate ability to read and interpret technical documents. [b,e]
13. Demonstrate ability to use various types of software applicable to course. [a]

Note: Letters following objectives correspond to ATMAE Outcomes

COURSE CONTENT: Topical areas of study include –

AWS electrode identification Code
AWS D1.1 Structural Steel Code
Visual acceptance criteria f for weldments
Polarities and Currents
Base Metal Identification for Steels
Duty Cycle
Weld Defects and Discontinuities
Welding Procedure Specification documents
Welding Safety
Weld Joint Geometry
Weld Bevels by hand and machine
Hand Weld manipulation for various weld types

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:

A.K. Smith Welding Grading Scale	
Letter Grade	**Percentage**
A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	< 59.5%

WELD grade scale	
Letter Grade	**Percentage**
A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	< 59.5%

Accessing Grades: Course grades are available for students by logging into Ivy Tech's online student system called, MyIvy, 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)
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) 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

Class Meeting	**Topic**	**Assigned Work**	**Work Due and Exams**
Week 1	Safety in the Welding Shop	Chapter 2 Review syllabus Safety Lecture (1,2)	
Week 2	Safety in the Welding Shop	Chapter 2 Review syllabus Film on safety	Lab: Safety setups Quiz: Safety
Week 3	Shielded Metal Arc Welding: Equipment and Supplies (c,e,f)	Chapter 9 Identify heat and metal distortion (3) Lecture: Describe the capabilities of welding equipment (4)	
Week 4	Shielded Metal Arc Welding: Equipment and Supplies	Chapter 9 Identify heat and metal distortion (3) Lecture: Describe the capabilities of welding equipment (4)	Quiz: Equipment
Week 5	Shielded Metal Arc Welding: Assembly and Adjustment	Chapter 10 Weld with A.C. and D.C current Prepare and tack welding coupons Make single and multipass welds (5,6,7)	Lab: Tack Welding Coupons Single and Multipass welds
Week 6	Shielded Metal Arc Welding: Assembly and Adjustment	Chapter 10 Weld with AC and DC current Prepare and tack welding coupons Make single and multipass welds (5,6,7)	Lab: Single and Multipass welds
Week 7	Shielded Metal Arc Welding: Electrodes	Chapter 11 Identify SMAW electrodes and AWS classification Describe DC straight and reverse polarity Describe proper electrode manipulation (9,10,11)	Lab: Single and Multipass welds Quiz: Electrodes

Week 8	Shielded Metal Arc: Electrodes	Chapter 11 Identify SMAW electrodes and AWS classification Describe DC straight and reverse polarity Describe proper electrode manipulation (9,10,11)	Lab: Straight and reverse polarity
Week 9	Shielded Metal Arc Welding: Flat Welding Position	Chapter 12 Weld in the flat, horizontal, vertical and the overhead position (8)	Lab: Welding Positions 3- flat welds
Week 10	Shielded Metal Arc Welding: Flat Welding Position	Chapter 12 Weld in the flat, horizontal, vertical and the overhead position (8)	Lab: Welding Positions 3- horizontal welds
Week 11	Shielded Metal Arc Welding: Horizontal, Vertical, and Overhead Welding Positions	Chapter 13 Weld in the flat, horizontal, vertical and the overhead position (8)	Lab: Welding Positions 3- overhead welds
Week 12	Shielded Metal Arc Welding: Horizontal, Vertical, and Overhead Welding Positions	Chapter 13 Weld in the flat, horizontal, vertical and the overhead position (8)	Lab: Welding Positions Quiz: Welding Positions
Week 13	Shielded Metal Arc Welding: Surfacing Welding Symbols	Chapter 14 Chapter 8 Demonstrate ability to read and interpret technical documents (13)	Lab: Blueprint Reading
Week 14	Shielded Metal Arc: Surfacing	Chapter 14 Demonstrate ability to use various types of software (14)	
Week 15	Shielded Metal Arc Welding: Surfacing	Chapter 14 Demonstrate ability to use various types of software (14)	
Week 16		**All Projects Due**	Final Exam