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

A.K. Smith Career Center
Ivy Tech Community College

Course Information:

High School Course Title & DOE #: **Principles of Welding Technology, 7110** **HS Credits:** 1.0

Ivy Tech Course Title and number): **Welding Fundamentals, WELD 100** **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
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Office/Campus Location: AK Smith Career Center
817 Lafayette Street Michigan City, Indiana 46360
Office Hours: 7:25am- 2:25pm

COURSE TITLE: Welding Fundamentals
COURSE NUMBER: WELD 100
PREREQUISITES: None.
SCHOOL: Advanced Manufacturing, Engineering, and Applied Science
PROGRAM: Industrial Technology
CREDIT HOURS: 3
CONTACT HOURS: Lecture: 2 Lab: 2
DATE OF LAST REVISION: Spring, 2019
EFFECTIVE DATE OF THIS REVISION: Fall, 2019

CATALOG DESCRIPTION: This course provides a basic study and application of commonly utilized welding processes as well as additional topics such as: welding blue print reading, OSHA 10 hour and welding safety, weld joint design, welding terminology, and welding quality control. Students will prepare for their welding education, as well as their welding career

through exposure to the welding lab environment and classroom. Students will also train with the latest in Virtual Welding Simulation. 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. Understand and identify welding symbols and blueprints. [b,e]
2. Discuss the need for workplace safety and workplace safety training programs as covered by the OSHA 10 hour program [c,f] :
    - Introduction to OSHA
    - Walking and Working Surfaces
    - Electrical Safety
    - Hazard Communication
    - PPE
    - Fire Protection and Prevention
    - Machine Guarding
    - Hazardous Materials
    - Fall Protection

3. Demonstrate basic welding techniques using a virtual welding simulator. [e]
4. Learn proper AWS Standard Welding Terms and Definitions. [e,f]
5. Identify the five basic welding joints. [e,f,i]
6. Understand and identify welding defects and discontinuities. [e,f]
7. Understand how to interpret Weld Procedure Specifications (WPSs) and their purpose. [e,f]
8. Demonstrate the use of oxyfuel welding and cutting. [e,f]
9. Demonstrate the use of plasma arc cutting. [e,f]
10. Discuss the current trends and opportunities in the welding field. [f,g]
11. Attain readiness to take OSHA 10 Hour General Industry Certification exam [c,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 -

Communication in common welding terminology
29 CFR 1910
MSDS
Lock out/tag out
Hazardous materials
Portable powered tool safety
Record keeping
Enforcement of safety regulations
Metallurgy fundamentals OSHA
Electrical fundamentals
Confined space
Zero energy state
Storage of flammable materials
Hand tool safety
Training
Right to know

Storage of fuel gas and high-pressure gas cylinders ANSI/ASC Z49.1 Code
AWS (American Welding Society)

Required Text and Materials:

Welding Fundamentals, Fifth Edition Goodheart-Wilcox
ISBN# 978-63126-328-6

Course Outline of Record WLD 100, Welding Fundamentals
Course Title: Arc Welding I
Course Number: WLD 100
Prerequisite: None
School: Advanced Manufacturing, Engineering, and Applied Science
Program: Industrial Technology
CREDIT HOURS: 3
CONTACT HOURS: Lecture: 2 Lab: 2
DATE OF LAST REVISION: Spring, 2019
EFFECTIVE DATE OF THIS REVISION: Fall, 2019

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 ● Film on safety (2)	Introduction to shop Lecture on safety
Week 2	Careers in Welding	● Chapter 1 ● Review syllabus ● Safety Review ● Current Trends in welding (10) ● Virtual Welding Simulator (3) ● Discuss the need for workplace safety and workplace safety training programs as covered by the OSHA 10 hour program (2)	Review on safety and equipment setup Safety Quiz Lab: Virtual Welding Simulator Practice
Week 3	Welding and Cutting Processes	● Chapter 3 ● Virtual Welding Simulator (3) ● Learn proper AWS Standard ● Welding Terms and Definitions (4)	Review: proper adjustment, use of regulators, and cutting torches Lecture: Proper technique Lab: Burning a straight line
Week 4	Welding and Cutting Processes	● Chapter 3 ● Virtual Welding Simulator (3) ● Learn proper AWS Standard ● Welding Terms and Definitions (4)	Review: proper adjustment, use of regulators, and cutting torches Lecture: Proper technique Lab: Burning a straight line
Week 5	The Physics of Welding Welding Symbols	● Chapter 4 ● Chapter 8 ● Understand and identify welding symbols and blueprints (1)	

Week 6	Plasma Arc Cutting	● Chapter 23 ● Demonstrate plasma arc cutting (9) ● Demonstrate oxyfuel welding and cutting (8)	
Week 7	Math for Welding	● Chapter 5	
Week 8	Math for Welding	● Chapter 5	Quiz: Welding Math
Week 9	Math Applications for Welders	● Chapter 6	
Week 10	Math Applications for Welders	● Chapter 6	
Week 11	Weld Joints and Positions	● Chapter 7 ● Identify (5) basic welding joints (5) ● Understand and identify welding defects and discontinuities (6)	Lab: create the (5) welding joint
Week 12	Weld Joints and Positions	● Chapter 7 ● Identify (5) basic welding joints (5) ● Understand and identify welding defects and discontinuities (6)	Lab: create the (5) welding joint
Week 13	Weld Joints and Positions	● Chapter 7 ● Identify (5) basic welding joints (5) ● Understand and identify welding defects and discontinuities (6)	Lab: create the (5) welding joint
Week 14	Welding Symbols	● Chapter 8 ● Blueprint reading (11,12,13)	
Week 15	Welding Symbols	● Chapter 8 ● Blueprint reading (11,12,13)	
Week 16		**All Projects Due**	**Final Exam**