WELD-702: WELDING LEVEL I

Effective Term
Fall 2025

BOT Approval Date
01/16/2025

Discipline
WELD - Welding Technology
Course Number
702

Course Title
Welding Level I

Short Title
Welding Level I

Credit Status (CB 04)
D - Credit - Degree applicable

Units

Lecture Units
2.00

Lab Units
2.00

Total Units
4.00

Hours

Lecture Contact Hours
32-36
Out of Class Hours Lecture
64-72

Lab Contact Hours
96-108
Out of Class Hours Lab
0.00

Total Contact Hours
160 - 180

Total Out of Class Hours
32 - 36

Total Student Learning Hours
192 - 216

Is this an existing Extensive Lab?
No

Do you want to propose this for Extensive Lab?
Yes

Distance Education
Yes

Distance Education

Distance Education Type
Hybrid Only

What will be done in face-to-face meetings
Students will perform welding/ cutting/ fabricating operations during lab time. Contact in the lab will be twice weekly. The lab will consist of 15 minutes of safety briefing, 2 hours and 30 minutes of welding, then 15 minutes to clean their work area and shut down equipment.

Are you using publisher content?
No

Regular Substantive Interaction
Instructor-to-student, student-to-student, and student-to-content contact shall be distributed in a manner that will ensure regular substantive interaction (RSI) is maintained not only weekly but also for the duration of the course. Instructor interactions should be equivalent in time, quality and consistency to the engagement students would receive in a face-to-face course—for example, through announcements, discussion participation, personalized feedback, video messages, or other instructional communications. Instructors are expected to be responsive to student inquiries within a 24-72 hour time frame excluding holidays. RSI will be maintained through a variety of methods: • Orientation - Students must be oriented to the online and face-to-face portions at the start of the course. • Announcements - Announcements using the course management system must be posted at least weekly to keep students current on course events, due dates, materials, etc. • Discussion Forums - Content-related discussion forums within the designated CMS will include appropriate instructor participation and will be initiated and maintained, with timely feedback provided. Instructors are required to monitor the discussions and related activities to provide guidance and direction. Open-ended discussion boards may be used to further learning and interaction. • MSJC Communication – Instructor will use MSJC-administered communication tools (such as email or the designated CMS communication tools) to regularly communicate with and provide ease of access to students. • Timely Feedback - Timely feedback on student work will be provided by the instructor, which may include comments and/or rubrics, within the Grades area of the designated CMS. • Scheduled Meetings – Hybrid and synchronous courses will meet at regularly scheduled times. ADA Compliance - All course interactions and content must be designed with accessibility in mind and meet ADA requirements.

Catalog Description
This course offers students an in-depth exploration of advanced welding techniques. Delving beyond the basics, participants will master the intricacies of shielded metal arc welding (SMAW), focusing on advanced principles, safety protocols, and the nuanced operation of welding equipment. Through a blend of theoretical understanding and hands-on practice, students will elevate their skills in the SMAW process, acquiring a robust foundation that extends beyond fundamental concepts.

Attach Supporting Documents
Welding Technology_095650_2307.pdf

Requisites

Prerequisite(s)

Prerequisite(s) (must be taken before)
WELD-701 (with a grade of C or better).

Codes

TOP Code (CB 03)
0956.50* - *Welding Technology

CIP Code
48.0511 - Metal Fabricator.

Repeatability Code
No

Grading Option
Letter grade OR P/NP

Learning Objectives

Learning Objectives

Learning Objective
1. Describe fundamental welding techniques using various processes, such as oxyfuel cutting, SMAW, GMAW, and FCAW, to join metal components effectively.
2. Analyze the significance of diversity and inclusion in welding, emphasizing their impact on innovation and industry success.
3. Interpret welding symbols and read blueprints accurately to understand welding specifications and requirements, ensuring precise execution of welding projects.
4. Examine the significance of creating an accessible and accommodating welding environment for individuals with disabilities.
5. Formulate a strong understanding of welding safety protocols and adhere to industry-standard practices to create a safe working environment for themselves and others.
6. Construct open dialogues about the consequences of biases and methods for cultivating inclusivity in welding.
7. Prepare and maintain weld quality by employing proper inspection techniques and adhering to industry standards, ensuring the integrity and durability of welded joints.

Learning Outcome Information

Course Learning Outcomes

Learning Outcome
1. Students will demonstrate proficiency in fundamental welding techniques, including oxyfuel cutting, SMAW, GMAW, and FCAW, enabling the effective joining of metal components.
2. Students will analyze the profound impact of diversity and inclusion in the welding industry, recognizing their role in fostering innovation and ensuring industry success.
3. Students will actively promote open dialogues addressing the consequences of biases while facilitating conversations about effective methods for cultivating inclusivity within the welding field.
4. Students will execute the quality of welds through proper inspection techniques and adherence to industry standards, ensuring the integrity and durability of all welded joints.

Program Learning Outcomes

Learning Outcome
1. Demonstrate an understanding of welding safety practices and procedures as per AWS and NCCER standards.
2. Interpret welding symbols and technical drawings for welding requirements.
3. Apply proper welding techniques to join different metal types using specified processes.
4. Analyze welding defects, determine causes, and inspect welds for compliance with AWS and NCCER standards.

Institutional Learning Outcomes

Communication: The student will effectively express and exchange ideas through listening, speaking, reading, writing, visual works, and other modes of interpersonal expression.
Critical Thinking: The student will analyze problems, gather and synthesize relevant information, evaluate ideas, information, and evaluate alternative points of view to create, innovate and implement effective solutions.
Scientific Awareness: The student will apply the scientific method of inquiry to assess potential solutions for real-life challenges by employing science-based knowledge and methodologies in daily life.

Content

Course Lecture Content

I. Welding Safety

a. Basic Welding Processes and Overview of the Welding Trade
b. Definition and Differentiation of SMAW, GTAW, and GMAW
c. Welding-Related Personal Protective Equipment (PPE)
d. Importance of Welding Safety: Hot Work Permits, Fire Watches, and Confined Space Operations

II. Oxyfuel Cutting
a. Basic Oxyfuel and Flame-Cutting Processes
b. Safe Work Practices: PPE, Fire/Explosion Prevention, and Work Area Ventilation
c. Cylinder Handling and Storage Precautions
d. Identification of Oxyfuel-Cutting Equipment and Consumables
e. Proper Operation Torch Preparation and Equipment Shutdown

III. Plasma Arc Cutting
a. Overview of Plasma Arc Cutting Processes and Safety Considerations
b. Introduction to Plasma Arc-Cutting Equipment
c. Setup of Plasma Arc Cutting Equipment and Work Area Preparation
d. Safe Operation of Plasma Arc Cutting Equipment
e. Standard Cutting Techniques and Demonstration of Equipment Setup

IV. Air Carbon Arc Gouging and Cutting
a. Overview of A-CAC Processes
b. Various Sizes and Shapes of Electrodes in A-CAC Work
c. Safety Precautions in A-CAC Processes
d. Setup of A-CAC Equipment and Work Area Preparation
e. Techniques for A-CAC Gouging and Washing

V. Base Metal Preparation
a. Safety Practices in Welding and Base Metal Preparation
b. Properties of Carbon Steel and Stainless Steel
c. Base Metal Cleaning: Chemical and Mechanical Methods
d. Types of Loads on Weld Joints and Different Weld Joint Types
e. Codes, Welding Procedure Specifications, and Demonstration of Beveling with Oxyfuel and Plasma Arc Cutting Equipment

VI. Weld Quality
a. Welding Codes and Related Organizations
b. Introductory Provisions of Welding Codes
c. Identification of Discontinuities: Porosity, Inclusions, and Cracking
d. Visual Inspection: Weld Profiles, Tools, and Techniques
e. Non-Destructive Testing: Magnetic Particle, Electromagnetic, Radiographic, and Ultrasonic Inspections

VII. SMAW - Equipment and Setup
a. Safety in Welding: Protective Clothing and PPE
b. Current Characteristics in SMAW
c. Tools for Cleaning Welds and SMAW Welding Cable Connections
d. Setup, Operation, and Maintenance of SMAW Equipment

VIII. SMAW Electrodes
a. SMAW Electrode Classification System
b. AWS Filler Metal Specifications System
c. Electrode Selection: Considerations and Criteria
d. Handling, Care, and Storage of SMAW Electrodes
e. Safety Practices, Equipment Preparation, and Welding Techniques in SMAW

IX. SMAW Beads and Fillet Welds
a. Safety Practices in SMAW
b. Equipment and Work Area Preparation for Welding
c. Proper Arc Striking Techniques

d. Restart and Termination of Weld Pass
e. Techniques for Stringer Beads, Overlapping, Weave Beads, and Fillet Welds

X. Joint Fitup and Alignment
a. Fit-up Gauges and Their Uses
b. Weldment Positioning Equipment: Standards and Applications
c. Plate, Pipe, and Flange Alignment Tools
d. Controlling Weldment Distortion: Techniques and Tools
e. Codes, Specifications, and Welding Techniques for Proper Fit-Up

XI. SMAW- Groove Welds with Backing
a. Safety Practices and Protective Equipment in SMAW
b. Types of SMAW Groove Welds with Backing and Terminology
c. Setup of SMAW Welding Equipment and Coupon Preparation
d. SMAW Groove Welding in Various Positions
e. Demonstration and Practice of SMAW Groove Welds in 1G, 2G, 3G, and 4G Positions with E7018 Electrodes

XII. SMAW- Open Root Groove Welds - Plate
a. Types and Details of Groove Joints
b. Standard Safety Practices in Welding
c. Electrodes for Groove Welding
d. Proper Work Area Preparation for Welding
e. Techniques in SMAW Groove Welding and Demonstration of Open-Root Groove Welding in Different Positions

Course Lab Content

I. Welding Safety and Trade Overview
a. Basics of Welding: Define the welding processes and discuss the welding trade.
b. Apprenticeship Programs: Review apprenticeship opportunities in the welding field.
c. Safety Measures: Describe the importance of practicing welding safety.
d. Safety Data Sheets: Introduce safety data sheets (SDSs) and material safety data sheets (MSDSs).
e. Discuss the importance of inclusivity and accessibility for individuals with disabilities in welding.
f. Exploring the Transformative Power of Diversity and Inclusion in the Welding Industry for Innovation and Success
g. Fostering Inclusivity in Welding through Open Dialogue and Bias Awareness

II. Oxyfuel Cutting
a. Basic oxyfuel or flame-cutting processes.
b. Safe work practices, including PPE and ventilation.
c. Precautions related to cylinder handling and storage.
d. Oxyfuel-cutting equipment and consumables.
e. Set up and operate the cutting torch properly.
f. Cutting techniques for thick and thin steel.

III. Plasma Arc Cutting
a. Plasma Arc Cutting Basics
b. Equipment Setup
c. Operating Safely
d. Cutting Techniques

IV. Air Carbon Arc Gouging and Cutting
a. A-CAC Processes
b. Electrodes
c. Safety Precautions
d. Equipment Setup
e. Gouging Techniques

V. Base Metal Preparation
a. Base Metal Properties

b. Joint Preparation
c. Beveling

VI. Weld Quality
a. Welding Codes
b. Discontinuities
c. Inspection Techniques
d. Welder Qualification

VII. SMAW - Equipment and Setup
a. Safety Practices
b. Equipment Setup

VIII. SMAW Electrodes
a. Electrode Classification
b. Selection and Handling

IX. SMAW Beads and Fillet Welds
a. Safety Procedures
b. Welding Techniques
c. Fillet Welds

X. Joint Fitup and Alignment
a. Fit-Up and Alignment
b. Welding Procedures

XI. SMAW - Groove Welds with Backing
a. Safety Measures
b. Groove Welding
c. Practical Welding

XII. SMAW - Open Root Groove Welds - Plate
a. Groove Joints
c. Welding Techniques
d. Practical Welding

Methods of Instruction

Method

Lecture

Integration

The lecture will focus on diversity and equity within welding apprenticeship programs. By understanding the current state of inclusivity and proposing practical solutions, students can actively contribute to a more equitable welding industry. In large and small groups, students will identify and discuss concepts related to personal biases within texts and ideas about their community or cultural ideologies.

DE Adaptations for MOI

Lectures will be posted in an electronic format within the CMS, with appropriate closed captioning and other accessibility requirements needed.

Method

Lab Activities

Integration

Hands-on labs and practical exercises will be an integral part of the course. Students will gain experience applying oxy-fuel, arc welding, and cutting topics and concepts.

DE Adaptations for MOI

In adapting hands-on labs and practical exercises for distance education in the Introduction to Welding Technology course, a virtual lab approach can be implemented. Utilizing simulation software, students can engage in realistic, interactive exercises that

replicate oxy-fuel, arc welding, and cutting processes. Virtual simulations would allow students to manipulate digital tools, experience welding techniques, and observe the outcomes in a controlled online environment. All the labs will use the CMS and will adhere to accessibility requirements.

Method

Observation and Demonstration

Integration

Oxy-fuel and arc welding and cutting demonstrations are designed to provide visual and procedural information regarding the course's theoretical concepts, techniques, and sequences.

DE Adaptations for MOI

Instructors can incorporate video demonstrations of welding procedures, providing step-by-step guidance, and emphasizing key concepts. To further enhance the remote learning experience, students could be encouraged to set up small-scale, safe home-based experiments using welding kits or materials provided by the course. Virtual collaborative sessions via video conferencing tools could facilitate group discussions, troubleshooting, and feedback sharing, ensuring that despite the distance, students actively apply and reinforce their understanding of welding topics. All of the observations and demonstrations will use the CMS and will adhere to accessibility requirements.

Method

Discussion

Integration

In large and small groups, students will identify and discuss concepts related to personal biases within texts and ideas about their community or cultural ideologies. As an example of other discussions to take place on the course, discussions on the current state of diversity in the welding industry. Exploring strategies to promote inclusivity and support underrepresented groups. Discuss the importance of cultivating a strong safety culture and explore best practices for maintaining a safe working environment. Discuss sustainable practices and how the welding industry can contribute to environmental conservation. Explore different career pathways, professional development opportunities, and certifications.

DE Adaptations for MOI

Course discussion will be used through CMS tools through discussion boards or accessible video conferencing software. The instructor can provide feedback through discussion boards within a week of the student's initial posts in real time when working in a synchronous online learning environment. All of the discussions will use the CMS and will adhere to the accessibility requirements.

Method

Film/video Viewing and Discussion

Integration

Technology and media may further assist students in comprehensive vital concepts. Videos, presentations, and interactive media may provide students with further visual instruction on course content.

DE Adaptations for MOI

Online courses will include accessible video clips and/or films on course content. These accessible video clips and/or films can be delivered synchronously through video conferencing software or asynchronously through the CMS. Accessible video clips and/or film materials such as accessible digital slide presentations closed caption videos, or links to external articles may be incorporated to supplement lectures and made available to students within the CMS. All materials used will meet accessibility guidelines.

Method

Group Projects

Integration

Work in small groups to practice effective collaboration and communication skills while addressing a course topic involving oxy-fuel and arc welding, cutting, and troubleshooting. Instructors may employ collaborative learning techniques to allow students to collaborate to draw insights and conclusions.

DE Adaptations for MOI

Group projects can be accessed through CMS tools, assignment boards, or accessible video conferencing software. The instructor can provide feedback through discussion boards within a week of the student's initial posts in real time when working in a synchronous online learning environment. Online students can participate in group projects through collaboration tools such as Google Workspace, Microsoft Teams, or other platforms integrated into the CMS. Video conferencing tools will be used for group meetings and discussions.

Methods of Evaluation

Method

Quizzes

Integration

Short quizzes will be administered throughout the course to assess students' understanding of key concepts and topics. Quizzes will be integrated into the course content, ensuring that students are actively engaged with the material and can demonstrate their understanding of the concepts.

DE Adaptations for MOE

Exams and/or tests administered fully online will be administered, graded, and evaluated through CMS. Exams/tests will be evaluated based on the demonstration of identification, understanding and application of major topics as described in course content in alignment with learning objectives. Exams will be administered in an equitable fashion in true or false, multiple choice, fill-in-the-blanks, and short answers questions. This provides an equitable opportunity for all students. Exams will be submitted to the online grading system within the CMS. Exams will be graded, be evaluated based on accuracy and completeness and students will receive feedback within 2 weeks, via the grade book, chat, or other accessible conferencing tools. Additional time may be warranted depending on the type and complexity of the exam.

Method

Self-Evaluation

Integration

Students will engage in a structured self-evaluation process to develop their understanding of biases and strategies for fostering inclusivity in welding. This process begins with students submitting a research and advocacy proposal that identifies barriers to inclusivity in welding programs and presents actionable solutions. Using a structured rubric, students will assess their work, evaluating the depth of their research, clarity of analysis, and feasibility of their solutions. They will then present their proposals via virtual platforms, where peer and instructor feedback will provide diverse perspectives. To conclude, students will submit a reflection discussing their insights on addressing biases and improving inclusivity, emphasizing how self-assessment and feedback have informed their advocacy efforts. This method integrates critical reflection, feedback, and open dialogue to prepare students to address biases and cultivate inclusivity in welding environments.

Evaluation Criteria: Students will be assessed based on the depth of their research, the clarity of their analysis, and the practicality of their proposed solutions to promote inclusivity in welding apprenticeships.
In this evaluation, students submit a written research and advocacy proposal outlining the barriers to inclusivity in their chosen apprenticeship program and the proposed solutions. This proposal should include a detailed plan to advocate for changes within the program.

DE Adaptations for MOE

Self-evaluations will be assigned periodically to ensure understanding of course content. Self-evaluations will cover course content. Periodic self and peer evaluations will evaluate students on their understanding of course content. Interaction will be assessed based on accuracy and completeness. The instructor will provide feedback within 72 hours for all assignments turned into the CMS and will meet accessibility requirements.

Method

Class Performance

Integration

Welding processes performed individually will allow students to demonstrate their ability to perform basic welding beads with the proper bead placement and achieve visual acceptance criteria. Students participating will be able to demonstrate various technical learning styles for success.

DE Adaptations for MOE

Online evaluation and interpretation of research may be administered collaboratively and/or individually through CMS. They may be presented as a discussion forum, blog, essay, audio/video presentation, live stream, or other digital presentation methods. Evaluation materials may be accessed using online resources through MSJC Library and presented through various features of the CMS. Evaluation and interpretation of research will be evaluated based on the demonstration of organization and clarity, critical thinking, identification, understanding, and application of welding concepts and their applications. Instructor feedback will be provided promptly through various components of the CMS, including but not limited to gradebook comments, discussion forums, video conferencing software, or inbox messaging. All materials and delivery must meet accessibility guidelines. All instructor/student communication must conform to accessibility and confidentiality guidelines. Instructors will provide feedback to individual students based on the results of posted assignments within a week of completion.

Method

Final Performance

Integration

Performance exams will be given to students periodically throughout the term to evaluate safety, technique, and procedures based on industry standards. Skill demonstrations will occur with each unit and be judged on equipment manipulation, effort management, and integration of multiple steps into a coherent process. Quality levels for these elements are based on the course rubric.

DE Adaptations for MOE

Exams and/or tests administered fully online will be administered and evaluated through CMS. The format may include multiple choice, short answer, essay or other format. Exams/tests will be evaluated based on the demonstration of identification, understanding and application of major topics as described in course content in alignment with Learning Objectives. All exams/tests must meet accessibility guidelines. Instructors will provide feedback to individual students based on the results of final exams/tests within a week of completion.

Assignments

Assignment Type

Other

In-class and/or outside of class

In-class

Formative or Summative

Summative

Assignment

Set up and operate Oxy-Fuel Track Torch. Produce entry-level cutting using oxy-fuel and arc cutting processes.

Example Lab Exercise:

Note: Exercise the safety precautions necessary to avoid injury to self or property when performing oxy-fuel welding, cutting, brazing, arc welding, and arc cutting, all documentation can be found in ANSI Z49.1-2021 Safety in Welding and Cutting Processes.

Step 1. Set up the cutting table by placing metal onto the cutting tray.

Step 2. Measure the thickness of the material to be cut

Step 3. Review the cutting chart to ensure proper tip size and pressure parameters are determined according to material size.

Step 4. Check regulator adjustment screw is not in the applied position on the regulator, if applied, turn screw to the non-applied location before moving on to step 5.

Step 5. Slowly crack open the valve on the tank and proceed to open it until the valve handle stops turning (Oxygen Tank only) On Acetylene bottle, open valve with a half turns only. (open just enough for pressure to read on the tank side of the supply side of the regulator pressure gauge, this is done to ensure safe valve shut off is achieved if a fire were to occur)

Step 6. Adjust the regulator screw to the predetermined pressure setting on both the oxygen regulator and the acetylene regulator

Step 7. Crack open the valve for the acetylene supply on the cutting torch

Step 8. Light the end of the torch with striker

Step 9. Adjust the flame by opening the valve to increase flow, increase until soot is no longer burning at the end of the flame.

Step 10. Slowly open the oxygen valve at the torch adjusting until you create a neutral flame.

Step 11. Open high-pressure valve on the torch to check for proper flame setting.

Step 12. Turn track torch motor on.

Step 13. Slowly run track torch over metal piece to preheat material before cutting

Step 14. Align the torch flame to the edge of the metal.

Step15. Once metal reaches a bright orange glow, open the high-pressure oxygen valve, and flip the clutch of the motor into drive mode

Step 16. Observe cut for effective operation of torch. (Protect eyes safely by wearing shade # 5 cutting lens, or if wearing an auto darkening weld hood switch hood into the grind mode)

Step 17. Once the cut is complete, turn off high pressure on oxygen, flip the drive motor to free mode on track torch, and return torch to beginning of the cut.

Step 18. Shut down torch according to manufacturer procedure.

Step 19. When done using torch, begin bleed down process.

Step 20. Bleed pressure from system.

Close tank valves on Oxygen and Acetylene tanks
Open flow valves on torch body to release remaining gas to atmosphere
Ensure both pressure valves of regulator (tank pressure and working pressure) needles have bled down to zero
Once pressure gauges are verified to be at zero, open the adjustment screw on the regulator until the adjustment screw is loose with no pressure applied.
Step 21. Clean up any mess made during operation of the track torch.

Grading and Feedback:

Evaluate whether students have completed the tasks as set out in the lab instructions. Assess the visual acceptance criteria according to AWS D1.1 standards. Recognize efforts in troubleshooting and problem-solving, even if the result isn't entirely correct.

Ensure that feedback is free of bias and respects all students' cultural, racial, and gender backgrounds. Feedback should be constructive and focused on the task, not the individual. Labs are graded immediately.

How assignment will be adapted in online format

Instructors can incorporate video demonstrations of welding procedures, providing step-by-step guidance, and emphasizing key concepts. To further enhance the remote learning experience, students could be encouraged to set up small-scale, safe home-based experiments using welding kits or materials provided by the course. Virtual collaborative sessions via video conferencing tools could facilitate group discussions, troubleshooting, and feedback sharing, ensuring that students actively apply and reinforce their understanding of welding topics despite the distance. The instructor will provide feedback within a week through one of the CMS tools and/or through individual personal feedback within a week; it will also meet accessibility requirements.

Assignment Type

Reading

In-class and/or outside of class

Outside of class

Formative or Summative

Formative

Assignment

Overview:
For this assignment, you must read the article "Accessible Welding Program for People with Disabilities Launched at Fleming College in Peterborough" by Natalie Hamilton. The article details the recent initiative by Junior Achievement of Northern and Eastern Ontario (JA-NEO) and the Council for Persons with Disabilities (CPD) to launch an accessible welding program at Fleming College. This program aims to provide individuals with disabilities the skills and support needed for a career in the skilled trades, breaking down barriers and fostering inclusivity within the industry. The article highlights the collaborative efforts between JA-NEO, CPD, and Employment Ontario to make the welding profession more accessible.
Task:
Summarize the key points of the article. Focus on:
The purpose and goals of the accessible welding program at Fleming College.
The roles of JA-NEO, CPD, and Employment Ontario in supporting individuals with disabilities in skilled trades.
The program impacts employment opportunities for individuals with disabilities in the welding industry.
Reflection:
In 200–300 words, reflect on the importance of creating accessible training programs in skilled trades. Consider:
How this program addresses the barriers individuals with disabilities face in entering the welding industry.
The potential benefits of inclusive skilled trades programs for the community and the economy.
How this initiative may influence future accessibility efforts in other skilled trades sectors.
Discussion Questions:
Answer the following in 100–150 words each:
What stood out to you the most about the approach to making welding more accessible, as described in the article? Why?
How might partnerships between organizations like JA-NEO, CPD, and colleges like Fleming influence the future of accessibility in the skilled trades?
What additional steps could be taken to enhance the accessibility of welding and other trades for individuals with disabilities?
Format:
Your summary should be 150–200 words.
The reflection should be 200–300 words.
Each discussion question response should be 100–150 words.
Use clear headings for each section (Summary, Reflection, and Discussion Questions).
Submission:
Submit your responses as a typed document or PDF, ensuring your work is well-organized and free from grammatical errors.
Grading and Feedback:
The instructor will review your report to ensure it is well-organized, plagiarism-free, and properly cited. Utilize a consistent citation style, such as APA or MLA, for your sources. Your evaluation in this assignment will be based on the quality of your research, the clarity of your report, and your ability to convey the individual's significance in the welding industry. Remember to submit your completed report by the specified deadline.

How assignment will be adapted in online format

Papers and reports can be assigned within the CMS using tools such as pages or assignments. Students will submit their papers via assignment submission links within the CMS or discussion boards to have students make comments on needed changes. The

instructor will provide feedback within a week through one of the CMS tools and/or through individual personal feedback within a week; it will also meet accessibility requirements.

Assignment Type
Writing

In-class and/or outside of class
Outside of class

Formative or Summative
Summative

Assignment
Diverse Welding Industry Voices

Objective: This assignment aims to engage with and celebrate diversity in the welding industry actively. It encourages students to learn from the experiences of diverse professionals in the field and reflect on the significance of diverse voices.

Instructions:

Identify and contact at least one professional currently working in the welding industry who represents diversity. Diversity can include factors such as gender, ethnicity, cultural background, or any other underrepresented group within the welding field.

Interview with the selected professional. You can record the interview (audio or video) or conduct a written interview. During the interview, ask questions about the individual's experiences, challenges, and contributions to the welding industry.

In your assignment, summarize the interview, emphasizing key insights, experiences, and perspectives shared by the professional. Highlight the importance of diverse voices and how they contribute to the welding industry.

Conclude the assignment with a reflective essay. Share your takeaways from the interview and how they have impacted your understanding of diversity in the welding field. Consider how these insights can inform and enrich your future career in welding.

Ensure that your reflective essay is well-organized and coherent and includes relevant quotes or anecdotes from the interview that support your reflections.

Your assignment will be evaluated based on the depth of insight and reflection, clarity and organization of your assignment, effective use of supporting evidence, proper grammar and style, and thoughtful peer review engagement.

How assignment will be adapted in online format
Papers and reports can be assigned within the CMS using tools such as pages or assignments. Students will submit their papers via assignment submission links within the CMS or discussion boards to have students make comments on needed changes. The instructor will provide feedback within a week through one of the CMS tools and/or through individual personal feedback within a week; it will also meet accessibility requirements.

Course Materials

Textbooks
NCCER Welding Level I - 6th Edition Pearson Published by Pearson (May 23, 2022) © 2023 ISBN13: 978-0-13-413110-8

Class Size Information

Class Size
30

Class Size Category

F - Individualized, skills#based instruction/field practice 30

Diversity and Inclusion

Explain how diversity and inclusion(e.g., gender, culture/race, sexuality, etc.) is infused into the course.

In this comprehensive Welding Level I course, the curriculum is meticulously designed to provide students with a well-rounded understanding of welding processes, safety protocols, and industry standards. The course not only delves into the technical aspects of welding, such as SMAW, FCAW, GMAW, and oxyfuel cutting but also prioritizes safety and inclusive practices. Throughout the course, a dedicated section explores the transformative power of diversity and inclusion in the welding industry for innovation and success.
Various components are strategically integrated to infuse diversity and inclusion into the course. For instance, the "Fostering Inclusivity in Welding through Open Dialogue and Bias Awareness" segment actively encourages students to engage in open discussions about personal biases, promoting an environment of mutual understanding. This emphasis on dialogue extends across the entire course, ensuring that students know the diverse voices in the welding industry.

Describe how assignments, instruction, evaluation, course content, and interactions are contextualized for diverse learners promoting an equitable course.

Assignments within the course are contextualized to encompass real-world scenarios, promoting equitable opportunities for all learners. For instance, discussions on safety practices include considerations for diverse personal protective equipment (PPE) to accommodate different needs and preferences. Additionally, exploring welding codes and related organizations underscores the importance of standard practices that transcend cultural and individual biases.
In terms of instruction, the course content incorporates examples and case studies that highlight diverse perspectives within the welding field. This contextualization enriches the learning experience and exposes students to various roles and contributions from individuals with different backgrounds.
Evaluation methods are designed to be inclusive, ensuring assessments reflect diverse learning styles and experiences. The course recognizes the multifaceted nature of welding expertise, acknowledging that diverse learners may excel in various aspects of the curriculum.
Interactions within the course are fostered through collaborative activities, group discussions, and practical demonstrations accommodating diverse learning preferences. This approach creates a supportive learning environment where students can share insights, learn from one another, and appreciate the richness of diverse perspectives in the welding industry.

Interactions

Explain how the course will incorporate student-to-student interaction.

Group projects: Collaborative projects that will require students to work closely with their peers. These assignments are designed to promote collaboration and problem-solving skills, providing a hands-on approach to understanding applications of shielded metal arc welding (SMAW).

In-class activities: Small-group activities and discussions will be assembled, allowing students to participate in the learning process actively. This not only enhances the fundamental understanding of shielded metal arc welding (SMAW) concepts and process applications but also encourages teamwork.

Discussion boards for Online setting: The CMS will randomly assign students to groups, facilitating diverse interactions. Additionally, utilize the CMS's wikis, blogs, and journals to enhance student-to-student interaction further.

Explain how the course will incorporate instructor-to-student interaction.

The Welding Level I course carefully curates instructor-to-student interaction to enhance the learning experience. Through in-class sessions, the course management system (CMS) tools, and accessible video conferencing software, the instructor actively engages with students, providing guidance and coordination in exploring welding technology.

Emphasizing a hands-on approach, the instructor offers real-time feedback on welding techniques, ensuring students grasp the practical aspects of the craft. Regular office hours and email support further facilitate one-on-one interactions, allowing students to seek clarification, discuss course content, or receive personalized guidance.

Additionally, the instructor fosters a sense of community by welcoming all students, providing constructive feedback on welding projects, and maintaining consistent communication through various channels, including instructional videos and electronic markup. This tailored approach ensures that students gain theoretical knowledge and develop the practical skills crucial for success in the demanding field of welding technology.

Explain how the course will incorporate student-to-content interaction.

The Welding Level I course facilitates meaningful student-to-content interaction, ensuring an engaging and enriching learning experience. This interaction is carefully woven into each module of the course, tailoring the content to align with the needs and preferences of diverse learners.

One example of student-to-content interaction is evident in the section focused on "SMAW Electrodes." Here, students learn about the SMAW electrode classification system and AWS filler metal specifications and actively engage with the content by participating in hands-on exercises. These exercises involve selecting electrodes based on specific criteria, handling and storing electrodes properly, and understanding the safety practices associated with SMAW. This practical application of knowledge fosters a deeper understanding of the content and enhances the student's ability to apply theoretical concepts in real-world scenarios.

Additionally, the course integrates interactive simulations and virtual labs to enhance student-to-content interaction further. For instance, in the "Joint Fitup and Alignment" module, students utilize virtual fit-up gauges to practice aligning weldments, gaining a practical understanding of the tools' applications in a controlled online environment. This virtual hands-on experience ensures students can apply their knowledge before transitioning to physical welding setups, providing a more comprehensive and accessible learning approach.

Moreover, the course content incorporates multimedia elements such as video demonstrations and interactive 3D models. In the "Plasma Arc Cutting" module, students engage with video demonstrations that illustrate the setup of plasma arc cutting equipment and showcase standard cutting techniques. This multimedia approach caters to different learning styles and enhances student engagement by providing dynamic and visually stimulating content.

Throughout the course, regular quizzes and self-assessment tools are integrated to allow students to gauge their understanding of the content. These assessments provide immediate feedback, allowing students to revisit specific topics needing further clarification, promoting self-directed learning.

To encourage continuous student-to-content interaction, discussion forums, and collaborative assignments are strategically incorporated. In the "Weld Quality" module, students participate in a discussion forum to analyze visual inspections of weld profiles, share insights, and collaboratively identify discontinuities. This collaborative approach fosters a sense of community among learners and reinforces the application of theoretical concepts to practical scenarios.

Explain how the course will incorporate student-to-self interaction (metacognitive).

Students engage in reflective self-assessment, gauging their progress in mastering fundamental welding concepts, such as diverse welding processes and safety standards set by the American Welding Society (AWS). The curriculum also encourages exploration of alternative problem-solving techniques, fostering a deep understanding of welding joint design, material selection, and process optimization. By combining these approaches, students become skilled welders and critical thinkers poised to tackle real-world welding challenges with confidence and innovation.

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