WELD-700: INTRODUCTION TO WELDING TECHNOLOGY

Effective Term
Fall 2026

BOT Approval Date
12/11/2025

Discipline
WELD - Welding Technology
Course Number
700

Course Title
Introduction to Welding Technology

Short Title
Intro to Welding Technology

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

Units

Lecture Units
2.00

Lab Units
1.00

Total Units
3.00

Hours

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

Lab Contact Hours
48-54
Out of Class Hours Lab
0.00

Total Contact Hours
80 - 90

Total Out of Class Hours
64 - 72

Total Student Learning Hours
144 - 162

Is this an existing 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. In an eight-week course, 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 is designed to provide students with a comprehensive foundation in welding technology. Students will learn fundamental principles and techniques of welding, emphasizing safety protocols, equipment operation, and hands-on practice.

Codes

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

CIP Code
48.0508 - Welding Technology/Welder.

Repeatability Code
No

Grading Option
Letter grade OR P/NP

Minimum Qualifications

Minimum Qualifications	And/Or
Welding	End

Learning Objectives

Learning Objectives

Learning Objective
1. Apply fundamental welding techniques using various processes, such as oxyfuel cutting, SMAW, GMAW, and FCAW, to join metal components effectively.
2. Identify and explore the contributions of diverse individuals, including those from different genders, ethnicities, or cultural backgrounds, who have made significant advancements in welding.
3. Differentiate welding symbols and read blueprints accurately to understand welding specifications and requirements, ensuring precise execution of welding projects.
4. Build a strong understanding of welding safety protocols and adhere to industry-standard practices to create a safe working environment for themselves and others.
5. Exhibit and maintain weld quality by employing proper inspection techniques and adhering to industry standards, ensuring the integrity and durability of welded joints.
6. Demonstrate strategies to promote gender diversity and create an inclusive culture within welding workplaces.

Learning Outcome Information

Course Learning Outcomes

Learning Outcome
1. Students will perform fundamental welding processes (oxyfuel cutting, SMAW, GMAW, and FCAW) to join metal components in accordance with specifications.
2. Students will interpret welding symbols and blueprints to plan and execute welding projects.
3. Students will demonstrate safe welding practices in accordance with industry safety standards and protocols.
4. Students will demonstrate professional workplace behaviors, including respectful collaboration in diverse teams and adherence to quality standards.
5. Students will inspect completed welds to identify defects and evaluate quality against industry standards.

Content

Course Lecture Content

1. Introduction to Welding, Cutting, and Safety fundamentals
    a. High Heat Safety
    b. Personal Protective Equipment (PPE)
    c. Burn Protection
    d. Welding Ventilation
    e. Electrical Safety
    f. High-Pressure Bottle Safety
    g. Acetylene Handling Safety
    h. Oxygen Handling Safety
    i. Welding Unity: Significant Advancements in Ethnicity and Cultural Backgrounds Gender Identification
2. Basic Welds and Joints
    a. Types of Welds
    b. Types of Joints
    c. Joint Geometry
3. Introduction to Oxy-fuel Cutting & Arc Cutting
    a. Equipment Safety, Setup, and Adjustment
    b. Cutting in The Flat Position
    c. Gouging in The Flat Position
4. Introduction to Shielded Metal Arc Welding (SMAW)
    a. Equipment Safety, Setup, and Adjustment
    b. Electrodes
    c. Striking an Arc
    d. Welding in The Flat Position Using 6010/7018

5. Introduction to Gas Metal Arc Welding (GMAW)
    a. Equipment Safety, Setup, and Adjustment
    b. Electrode Types and Aizes
    c. Shielding Gases
    d. Welding in The Flat Position
6. Introduction to Flux Core Arc Welding (FCAW)
    a. Equipment Safety, Setup, and Adjustment
    b. Electrode Types and Sizes
    c. Shielding Gases
    d. Welding in The Flat Position
7. Introduction to Gas Tungsten Arc Welding (GTAW)
    a. Equipment Safety, Setup, and Adjustment
    b. Electrode Types and Sizes
    c. Shielding Gases
    d. Welding in The Flat Position
8. Introduction to Arc Cutting
    a. Equipment Safety, Setup, and Adjustment
    b. Creating an Inclusive Welding Workplace Proposal
    c. Cutting in The Flat Position
    d. Gouging in The Flat Position

Course Lab Content

1. Welding Safety and Basics
    a. High Heat Safety and Personal Protective Equipment (PPE)
    b. Understanding Burn Protection and Welding Ventilation
    c. Electrical Safety and High-Pressure Bottle Safety
2. Introduction to Welding Processes
    a. Exploring Basic Welds and Joints
    b. Identifying Various Types of Joints
    c. Understanding Joint Geometry
3. Oxy-fuel and Arc Cutting
    a. Introduction to Oxy-fuel Cutting Equipment
    b. Oxy-fuel Cutting in the Flat Position
    c. Introduction to Arc Cutting Equipment
    d. Arc Cutting in the Flat Position
4. Shielded Metal Arc Welding (SMAW)
    a. SMAW Equipment Safety and Setup
    b. Electrode Types and Sizes in SMAW
    c. Striking an Arc in the Flat Position
    d. Welding in the Flat Position using 6010/7018
5. Gas Metal Arc Welding (GMAW)
    a. GMAW Equipment Safety and Setup
    b. Understanding Electrode Types and Sizes in GMAW
    c. Shielding Gases in GMAW
    d. Hands-on Welding Practice in the Flat Position
6. Flux Core Arc Welding (FCAW)
    a. FCAW Equipment Safety and Setup
    b. Identifying Electrode Types and Sizes in FCAW
    c. Shielding Gases in FCAW
    d. Welding in the Flat Position using FCAW
7. Gas Tungsten Arc Welding (GTAW)
    a. GTAW Equipment Safety and Setup
    b. Electrode Types and Sizes for GTAW
    c. Shielding Gases in GTAW
    d. Hands-on Welding Practice in the Flat Position
8. Advanced Arc Cutting and Gouging Techniques

a. Advanced Arc Cutting Equipment Safety and Setup
b. Advanced Cutting in the Flat Position
c. Advanced Gouging in the Flat Position
d. Final Evaluations and Course Wrap-up

Methods of Instruction

Method

Lecture

Integration

Students will explore the contributions of diverse individuals in welding, recognizing various genders, ethnicities, and cultural backgrounds through case studies and examples of diversity initiatives. Guest speakers from the industry will offer diverse perspectives, while group workshops will allow students to collaborate on proposal development. Peer feedback sessions will help refine their work, and the assignment will conclude with a role-playing exercise where students present their proposals, simulating real workplace scenarios.

DE Adaptations for MOI

Accessible recorded lectures, slide show presentations, and supplementary materials will be available for online students through the CMS. Accessible webinars and live-streamed lectures will be conducted to facilitate real-time interaction and discussions

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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 may 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 lab activities will meet accessibility guidelines.

Method

Observation and Demonstration

Integration

Oxy-fuel, 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

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. Additionally, 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 observation and demonstration activities will meet accessibility guidelines.

Method

Discussion

Integration

At the beginning of the assignment, list diverse figures from the welding industry. Allow students to choose the one they find most interesting.
Host a research-focused workshop early in the semester to introduce students to resources available for their reports.
Encourage peer discussion, where students can share their chosen figures and initial findings.
Schedule writing workshops covering key report writing elements, from structure to citation styles.
Offer opportunities for one-on-one guidance and feedback on research progress and drafts.

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 student's initial posts in real time when working in a synchronous online learning environment.

Method

Film/video Viewing and Discussion

Integration

Technology and media may further assist students in comprehensive key concepts. Videos, presentations, and, interactive media may be available to students in order to provide further visual instruction on course content.

DE Adaptations for MOI

Online courses will include video clips and/or films on course content. These video clips and/or films can be delivered synchronously through video conferencing software or asynchronously through the CMS. 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 material 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 should formatively cover the major content of welding technology and align with Learning Objectives. 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. Immediate feedback will be provided to students to reinforce learning.

Method

Homework

Integration

The assignment can be introduced early in the course, allowing students ample time for research, writing, and revisions.
Schedule regular check-ins and workshops focused on different aspects of the assignment, such as research, critical analysis, and writing, to guide students through the process.
Utilize peer discussion and review to foster an inclusive learning environment where students learn from one another's diverse perspectives.

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 another type of question. Exams/tests will be assessed based on the demonstration of identification, understanding, and application of major topics as described in the course content, in alignment with the Learning Objectives. Evaluation feedback on papers/essays will be provided to students in a timely manner using the gradebook, live stream, video conferencing software, inbox messaging, or other functions available through the CMS. All instructor/student communication must conform to accessibility and confidentiality guidelines. Instructors will provide feedback to individual students based on the results of the posted assignment within a week of completion.

Method

Class Performance

Integration

Employ evaluation tools like quizzes, practical labs, group projects, and presentations to cater to different strengths and learning styles. This ensures that students aren't pigeonholed based on one type of assessment. Provide clear and transparent grading rubrics for all assignments and exams. Ensure these rubrics are designed inclusively, focusing on objective criteria rather than potentially biased subjective judgments.

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

Formative

Assignment

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

Example Lab Assignment:

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.

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 turn 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.

a. Close tank valves on Oxygen and Acetylene tanks

b. Open flow valves on torch body to release remaining gas to atmosphere

c. Ensure both pressure valves of regulator (tank pressure and working pressure) needles have bled down to zero

d. 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. Instructor will provide feedback within a week through one of the CMS tools and/or through individual personal feedback within a week.

Assignment Type

Reading

In-class and/or outside of class

Outside of class

Formative or Summative

Formative

Assignment

Overview:
For this assignment, you must carefully read the article "Celebrating Women Welders: Honoring Their Legacy and Impact" by Lucy Clayton, reflecting on women's significant contributions to welding, particularly during World War II. The article highlights figures like "Winnie the Welder" and the Surrency sisters, who challenged societal norms and helped pave the way for future generations of women in the industry.
Task:
Summarize the key points of the article. Focus on:
The role of women in the welding industry during WWII.
Specific figures were mentioned (e.g., "Winnie the Welder" and the Surrency sisters).
The legacy of these women and how their efforts impacted future opportunities for women in welding.

Reflection: In 200–300 words, reflect on how the contributions of these women have influenced today's welding industry, particularly in promoting diversity and inclusion. Consider:
What challenges did women face during WWII, and how did they overcome them?
How do initiatives mentioned in the article (like The Welding School) continue the legacy of supporting women in welding today?
Why is celebrating and recognizing women's contributions in male-dominated industries important?
Discussion Questions: Answer the following in 100–150 words each:
What stood out to you about the women welders mentioned in the article? Why?
How do you think recognizing historical figures like "Winnie the Welder" can inspire more women to enter industries like welding?
What steps can schools and organizations take to further support women in welding today?
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

Students will respond to prompts posted by instructor on the CMS. Students will upload a written paragraph to the CMS or discuss the assignment using accessible video conferencing software. Instructor can provide feedback within a week through one of the CMS tools and/or through individual personal feedback within a week.

Assignment Type

Writing

In-class and/or outside of class

Outside of class

Formative or Summative

Summative

Assignment

Assignment

Your objective for this assignment is to develop strategies to foster diversity and inclusivity within welding workplaces. As a student, you are tasked with creating a proposal tailored for industry leaders, HR professionals, and welding organizations.

The introduction section emphasizes the significance of diversity and inclusion in welding workplaces. Move on to the recruitment section, where you should recommend inclusive hiring practices that actively encourage a diverse workforce. Consider various aspects of the industry, such as recruitment practices, training programs, mentorship opportunities, and addressing biases and prejudices. Identify areas where improvements in diversity and inclusivity can be made.

Within the training section of your proposal, suggest strategies to ensure that training and educational programs are accessible and accommodating to individuals from diverse backgrounds. Proceed to the mentorship section, where you will propose mentorship programs specifically designed to support underrepresented groups in welding. The section on eliminating biases discusses strategies for addressing and removing biases, stereotypes, and prejudices within the field.

In the benefits section, conclude your proposal by highlighting the long-term advantages of having diverse and inclusive welding workplaces. Ensure that your proposal is well-structured, evidence-based, and persuasive. Use professional language and critically evaluate the practicality and feasibility of your recommendations.

Your submission will be evaluated based on the depth of your recommendations, practicality, and ability to effectively convey the importance of diversity and inclusion within the welding industry. Remember to submit your proposal by the specified deadline.

How assignment will be adapted in online format

Assignments will be posted through the CMS for students to access. Students will submit the assignment through CMS. Instructor feedback will be given through grade book and/or individual feedback within a week.

Course Materials

Textbooks

Modern Welding, 13th Edition By: William A. Bowditch, Kevin E. Bowditch, and Mark A. Bowditch Copyright: 2024 ISBN: 978-1-68584-571-1

Class Size Information

Class Size

30

Class Size Category

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

Diversity and Inclusion

Course Design and Materials: Course will incorporate diverse perspectives, authors, and examples that reflect a variety of cultures, identities, and lived experiences. Instructional materials will be reviewed regularly to ensure representation, inclusivity, and alignment with equity-minded practices across disciplines.

Inclusive Learning Environment: Instructors will establish classroom norms and policies that promote respect, civil discourse, and belonging in both online and face-to-face classes. Clear expectations for communication and engagement will support a learning space where all students feel valued and heard.

Accessible Instruction: Course content will be delivered using accessible design. Materials will follow accessibility guidelines within the CMS, including captioned media, readable document formats, and multiple means of engagement to support diverse learning.

Equitable Teaching Practices: Instructors will use transparent and grading criteria, varied assessment methods, and timely feedback to promote fairness and student success. Opportunities for revision, reflection, and multiple demonstrations of learning may be incorporated when appropriate to the discipline.

Culturally Responsive Pedagogies: Instructional strategies will encourage critical thinking about diverse perspectives and systems of power relevant to the course content. Faculty will foster opportunities for students to connect course material to real-world contexts.

Ongoing Reflection and Improvement: Faculty will engage in continuous professional development related to IDEAA principles and reflect on course practices using metacognition to identify opportunities for increased equity, inclusion, and accessibility.

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

The Introduction to Welding Technology course embraces diversity and inclusion by incorporating inclusive language, diverse examples, and case studies representing individuals from various genders, cultures, races, and backgrounds in the welding industry. Collaborative learning activities promote interaction among students with diverse backgrounds, fostering an inclusive and supportive environment. Assessment methods focus on evaluating skills and knowledge, ensuring fairness and equity. The course emphasizes respect, empathy, and open-mindedness, creating a safe and welcoming classroom environment. By infusing diversity and inclusion principles, the course prepares students with technical skills and the ability to work effectively in a diverse workforce, contributing to a more inclusive and tolerant welding industry.

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

In the Introduction to Welding Technology course, a commitment to equity is evident through contextualized assignments, inclusive instruction, appropriate evaluation methods, diverse course content, and inclusive interactions. Online lessons offer flexibility, accommodating various learning styles and abilities. In-person instruction incorporates varied techniques to engage learners through

visual aids, demonstrations, and multimedia resources. Evaluation methods are industry-based, transparent, and unbiased, providing equal opportunities for success. Course content represents diverse perspectives and experiences. Online discussions foster a respectful and inclusive environment where all voices are valued. By embracing these practices, the course creates an equitable learning experience, recognizing and supporting all learners' diverse needs and strengths.

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 promote collaboration and problem-solving skills, providing a hands-on approach to welding technology.

In-class activities: Small-group activities and discussions will be assembled, allowing students to participate in the learning process actively. This structure not only enhances understanding of welding concepts and the fundamentals of basic welding skills in the SMAW, GMAW, FCAW-G, FCAW-S, GTAW welding process and also encourages teamwork and adaptability.

Students will model learning from each other and engage in peer-to-peer feedback as they will execute the same welds in the flat position using several welding and cutting processes used in the welding technology program.

This peer-to-peer interaction eliminates barriers to success by offering multiple points of view and individual guidance on technique and parameter settings on the welding machines.

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 Introduction to Welding Technology course carefully curates instructor-to-student interaction to enhance the learning experience. Through in-class sessions, the instructor emphasizes a hands-on approach to performing a weld in the flat position in several welding processes, which include SMAW, GMAW, FCAW-G, FCAW-S, and GTAW; the instructor offers real-time feedback on welding techniques, ensuring students grasp the practical aspects of the craft. As a hybrid course, the course also uses course management system (CMS) tools and accessible video conferencing software, allowing the instructor to engage with students actively and providing guidance and coordination in exploring welding technology.

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 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 welding technology.

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

Online lectures, whether attended in person or virtually, incorporate interactive "test your knowledge" segments, providing students with immediate feedback to gauge their comprehension. These lectures are crafted with universal design principles, ensuring accessibility for all learners. Complementing traditional lectures are engaging video shorts, reinforcing crucial topics from the textbook and lectures. These videos prioritize accessibility, featuring transcriptions for an inclusive learning experience. To further enhance understanding and readiness for assessments, students have access to practice exams and problems that allow them to apply their knowledge in practical scenarios. This comprehensive approach to course delivery ensures that students absorb theoretical concepts and receive real-time feedback, reinforcement through multimedia, and hands-on practice for a well-rounded introduction to welding technology.

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.

Key: 3105