Course Title:
Pipe Welding Processes

Catalog Description:
This course provides an introduction to pipe welding processes in accordance with the American Welding Society 1G & 2G standards. Students will learn basic pipe layout and preparation techniques including bevel, quarter mark, cut, fit, and weld basic pipe joints in various positions from hand drawn templates. Cutting techniques will concentrate on manual Oxy-Fuel cutting pipe joints for accurate fit-up. Each pipe joint will be welded and inspected to meet visual inspection criteria. Hands-on welding techniques for Pipe processes using Shielded Metal Arc Welding, Gas Metal Arc Welding and Gas Tungsten Arc Welding of carbon steel pipe in the 1G & 2G position.

Fulfills MN Transfer Curriculum Area(S)
Goal 1: Communication: ___ by meeting the following competencies:

Goal 2: Critical Thinking: ___ by meeting the following competencies:

Goal 3: Natural Sciences: ___ by meeting the following competencies:

Goal 4: Mathematics/Logical Reasoning: ___ by meeting the following competencies:

Goal 5: History and the Social and Behavioral Sciences: ___ by meeting the following competencies:

Goal 6: The Humanities and Fine Arts: ___ by meeting the following competencies:

Goal 7: Human Diversity: ___ by meeting the following competencies:

Goal 8: Global Perspective: ___ by meeting the following competencies:

Goal 9: Ethical and Civic Responsibility: ___ by meeting the following competencies:

Goal 10: People and the Environment: ___ by meeting the following competencies:

Prerequisites or Necessary Entry Skills/Knowledge:
### Topics to be Covered
- The use and selection of personal protective equipment, eye and face protection, clothing
- Weld shop safety
- Demonstrate open root pass and hot pass
- Demonstrate fill and cover passes
- Open root pipe 6010 and 7018 in Shielded Metal Arc Welding
- Machine set-up and operation
- Weld 1G & 2G Pipe to AWS Weld procedure specifications
- Weld symbols for tubular and pipe welding
- Welding print reading for tubular and pipe welding
- Pipe fitting, beveling, grinding

### Student Learning Outcomes
- Recognize and demonstrate weld shop safety and the use of personal protective equipment.
- Demonstrate safe and proper use of GMAW, SMAW, GTAW equipment and components.
- Perform a groove weld in 1G & 2G positions.
- Evaluate welds for compliance with American Welding Society standards and codes.
- Hand cut pipe welding coupons.
- Hand bevel pipe welding coupons.
- Demonstrate the proper set up and use of oxy-fuel cutting and pipe beveling.
- Identify and correctly prepare root nose for welding.
- Tack weld and feather grind tack welds for welding pipe.
- Weld 6010 1G & 2G open root and hot passes.
- Weld 1G & 2G fill and cover passes.
- Perform accurate measurement and marking for cutting and beveling.
- Identify pipe welding symbols.

### Is this course part of a transfer pathway?
- **Yes** □  
- **No** □

*If yes, please list the competencies below*

New Course 11/19