



# Industrial Mechanics and Welding Program of Study

## Proficiencies Needed to be Successful in Industrial Mechanics and Welding:

### Math:

#### Modeling

- Use numerical phenomena or quantities to model a situation.
- Use geometric shapes and their properties to model physical objects.

#### Numbers and Quantity

- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of operations with fractions.

#### Algebra

- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

#### Functions

- Understand ratio concepts and use ratio reasoning to solve problems.
- Analyze proportional relationships and use them to solve real-world and mathematical problems.

#### Geometry

- Draw, construct, and describe geometrical figures and describe the relationships between them.
- Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean Theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

### English Language Arts:

#### Reading

- Determine the meaning of words and phrases as they are used in the text, including figurative, connotative, and technical meanings.
- Determine the central ideas of the text and provide an objective summary.

#### Writing

- Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.
- Draw evidence from literary or informational texts to support analysis, reflection, and research.

#### Language

- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

### Physical Sciences:

- Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
- Plan and conduct investigations, make observations and measurements to identify materials based on their (observable) properties.
- Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
- Construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.
- Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

## Education and Career Pathways out of Industrial Mechanics and Welding:

### Post-Secondary Education:

Recent graduates have been accepted at many colleges, including the following:

- Vermont Technical College
- Community College of New Hampshire
- Community College of Vermont
- Lincoln Technical College

### Certifications:

- SP2 Environmental and Safety Training
- WorkKeys National Career Readiness Certification

### Apprenticeships:

- Students have the opportunity to participate in Cooperative Education and Job Shadow placements at numerous Upper Valley businesses and organizations.

### Employability:

Many IMW students have expressed interest in pursuing careers in the following areas:

- Welding Trades
- Electrical Trades
- Machining Trades
- Mechanical Trades

Many local manufacturing firms, such as Hypertherm, TomTom North America, GW Plastics, American Precision Museum, and Timkin, provide potential future career opportunities for IMW students.