



# Bridges Career Academy

## Manufacturing

### Swanville High School

The Manufacturing Academy provides students with an understanding of the vast number of careers in the world of manufacturing today. Students will experience working with a variety of metals, while designing, welding, machining and building machines. Skills in mechanical designing using blueprint reading, engine operations, measuring, and shop safety are essential elements of the courses. The academy is project based, uses real life activities and allows students to design and build a high mileage car for competition.

## Academic Courses

- Welding I
- Basic Metals/Metal Fabrication I
- Supermileage
- Career Investigation I/II

## Career Experiences

- Tour local businesses
- Listen to industry speakers
- Attend the Bridges Career Exploration Day or other regional career fairs

## Completion Standards

COMPLETE

- Welding I & Basic Metals/ Metal Fabrication I**
- + one course**

GRADES **B** ↑

Earn a **certificate** and **green cord** at graduation



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## Job Skills

In addition to having technical skills, employers expect workers in this industry to have these skills:

- Understanding planning and time management
- Be an active member of a team
- Use critical thinking and problem-solving skills
- Work precisely and manage tools and equipment
- Understand blueprints
- Work safely



# Manufacturing Career Academy

## Swanville High School

The Metals Design Academy provides students with an understanding of the vast number of careers in the world of manufacturing today. Students will experience working with a variety of metals, while designing, welding, machining and building machines. Skills in mechanical designing using blueprint reading, engine operations, measuring, and shop safety are essential elements of the courses. The academy is project based, uses real life activities and allows students to design and build a high mileage car for competition. When completing this academy, students will have skills to enter the workforce or go on to higher education. Students will use mechanical drafting to design a personal project; experience hands-on activities that include machine operation, and material fabrication and metal finishing. Students put blueprint reading, welding skills and mathematical skills to work in a practical way. With the variety of career opportunities in the manufacturing industry, students will be prepared to go directly to employment when completing this Academy or continue in a manufacturing program at a post-secondary college.

### ACADEMY COURSES

#### ***Welding I***

This course is designed for any student who may have an interest in welding. Subjects covered will be stick, TIG, MIG wire feed, oxyacetylene welding and cutting, welding aluminum, repair projects, and the basic operation of a plasma cutter. Students will be able to select and construct a project of their own as they develop welding skills.

**2 High School Credits**

#### ***Basic Metals/Metal Fabrication I***

This course will introduce the students to career related occupations in the manufacturing trades. Some math will be involved in writing up their material list and figuring the final cost, as well as, drafting their project orthographically before they are allowed to start their project. Machine operation and safety will be emphasized, and basic projects can be constructed. This class is designed for hands-on-builders. Students will learn basic welding techniques such as oxy-acetylene and plasma cutting, Arc, TIG and MIG wire feed welding. Curriculum includes learning about aerodynamics, metal cutting fabrication and small engine and drive systems. Students will design and build a car for the MN Supermileage competition.

**2 High School Credits**

#### ***Supermileage***

This class is designed for students who have completed the "Basic Metals/Metal Fabrication I" course. Students will continue to challenge themselves by learning more advanced welding skills and metalworking skills as well as enhancing their design skills as they plan and design personal metal projects. Students will also design and build a car for the MN Supermileage competition. This course includes a two-day competition to Brainerd International Raceway in May.

**2 High School Credits**

#### ***Career Investigation III***

Students will research several career paths and have hands-on experience in each one. These include: Construction, Manufacturing, Automotive, Energy and Agriculture. Students will learn the safe working practices in each field. Students will be involved with tours of local businesses and colleges and have guest speakers give presentations on career outlook, education required and industry needs.

**2 High School Credits**

### COMPLETION STANDARD

#### **Academic Completion Standard**

Students wishing to receive Academy certification must complete Welding I and Basic Metals/Metal Fabrication I and choose either Supermileage or Career Investigation. Student must achieve a minimum of a 'B' average in all courses.

-OVER-



# Manufacturing Career Academy

## Swanville High School

### **CAREER EXPERIENCES**

Students will explore and research careers with industry speakers, work with professionals in the industry, tour local businesses and participate in Bridges Career Exploration Day.

### **JOB SKILLS**

In addition to having technical skills, employers expect their workers to have other skills such as:

- Understanding planning and time management
- Be an active member of a team
- Use critical thinking and problem-solving skills
- Work safely
- Work precisely and manage tools and equipment
- Understand blueprints

**CAREER OPTIONS:** [www.careerwise.minnstate.edu/careers](http://www.careerwise.minnstate.edu/careers)

**JOB OUTLOOK:** [www.careerwise.minnstate.edu/jobs](http://www.careerwise.minnstate.edu/jobs)

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