



## American Precision Museum Field Trip Planner 2021-2022

**DATES & TIMES** Open daily 10am—5pm, May 1 through October 31. We can also accommodate school groups before 10am. (The museum exhibit hall is not heated as it's an historic 1846 building, so between November and April, we're happy to accept groups who are prepared to brave the cold!)

### FEES

**School groups**, \$4 per student. Adult chaperones admitted free (including bus/van drivers).

### ACTIVITIES

Class groups can be split into smaller groups to rotate through a series of activities that may take about ½ hour each.

### American Precision Museum Field Trip Planner

Topic: **Measurement**

This tour is suitable for students in grades K - 12 and usually takes 30-60 minutes (although if you tell us your parameters, we can adjust.)

We recommend discussing the Key Words and Careers before your visit.

**Key Words:** tolerance, precision, accuracy, interchangeable, "replace a part"

#### **Career Context:**

Even though a lot of the museum dates back two hundred years, manufacturing continues to evolve and change. Here is an example of a job that real people do today that is related to our topic!

Quality Inspector, Additive and Precision Manufacturing and Energy Sector (My Next Move)

#### **What to look for during your tour:**

Pattern Tracing, Indexing Machines

This is a hands-on activity that might enhance your experience:

Draw a widget challenge

You might be interested in a demonstration of: Haas with D-Tect It

After the tour is over, here are some discussion prompts for your class:

**Basic question:** Why do we measure time, weight, hardness, distance, power, or speed?

**Advanced question:** How does the Internet of Things change how we measure?

### **American Precision Museum Field Trip Planner**

Topic: **Waterpower**

This tour is suitable for students in grades K- 8 and usually takes 30-60 minutes (although if you tell us your parameters, we can adjust.)

We recommend discussing the Key Words and Careers before your visit.

**Key Words:** lineshaft, pulley, mill, transfer

**Career Context:**

Even though a lot of the museum dates back two hundred years, manufacturing continues to evolve and change. Here is an example of a job that real people do today that is related to our topic: Hydroelectric engineer

**What to look for during your tour:** blueprints

This is a hands-on activity that might enhance your experience: APM x Sparkshop Energy Transfer Dynamo activity.

You might be interested in a demonstration of: Manual Gear Shaper

After the tour is over, here are some discussion prompts for your class:

**Basic question:** What happens if there is a drought?

**Advanced question:** Can you think of a few ways the museum can save energy?

*NGSS Core:*

*Forces and Motion (PS2A, B)*

### **American Precision Museum Field Trip Planner**

Topic: **Simple Machines**

This tour is suitable for students in grades k - 12 and usually takes 30-60 minutes (although if you tell us your parameters, we can adjust.)

We recommend discussing the Key Words and Careers before your visit.

**Key Words:** lever, inclined plane, screw, wedge, axle, gear train, pulley, pendulum

**Career Context:**

Even though a lot of the museum dates back two hundred years, manufacturing continues to evolve and change. Do you think we still make and use simple machines?

Can you think of a job that might use pulleys?

**What to look for during your tour:**

This is a hands-on activity that might enhance your experience: Handheld Gear Devices

You might be interested in a demonstration of: Fellows Gear Shaper

After the tour is over, here are some discussion prompts for your class:

**Basic question:** How can you lift more weight with a lever?

**Advanced question:** Can you define 'mechanical advantage' and 'ideal mechanical advantage'?

*NGSS Core:*

*Forces and Motion (PS2A, B)*

*Definitions of Energy (PS3A, B)*

**Windsor - Shaping America The Birthplace of “American System of Manufacturing”**

Length of Program: 1 hour

Grade levels: 7 - 12

The 1846 Robbins and Lawrence Armory that houses the museum changed over time. Maps and census records reveal changes in manufacturing and labor. This topic has three parts:

1. Exterior Tour: Tour the exterior of the building and gather architectural evidence to figure out what was the building usage and how it was powered. Explore historic preservation.
2. Learning Lab: Analyze primary sources including maps and census records to create a timeline of change over time during the era of industrial revolution and immigration.
3. Exhibit Tour: visit the exhibits and learn about the inventors and laborers in Windsor who forged the Industrial Revolution. See the demonstrations in the Working Machine Shop.

*Common Core History Social Studies:*

*Integrating visual information (CCSS.ELA-LITERACY.RH.6-8.7)*

*Analyzing primary sources (CCSS.ELA-LITERACY.RH.6-8.2)*

\*Please feel free to suggest other ideas that would enhance your classroom activities and museum visit experience.