

# Technology Education Curriculum Map

7<sup>th</sup> Grade • 9-Week Quarter • Wood Lab • 4 Units

*Last Updated: 4/3/06*

<u>Standard</u>	<u>CO2 Dragsters</u>	<u>Display Stand</u>	<u>Electricity</u>	<u>Plastics</u>
1.				
2.		Day 2	Day 1-2	Day 1-5
3.				
4.				
5.				
6.				
7.				
8.				
9.	Day 2, 19-20		Day 1-2, 4	
10.				
11.	Day 2-5, 11-17, 20	Day 1-5	Day 5	Day 1-5
12.	Day 6-10, 18		Day 3-4	
13.	Day 1	Day 3		
14.				
15.				
16.	Day 18			
17.				
18.				
19.				
20.				

Module/Resources	Standard/Benchmark	Assessment
<b>CO2 Dragster</b>	<b>Standards for Technological Literacy</b>	<b>In this lesson students will...</b>
<b>Day 1:</b> <ul style="list-style-type: none"> <li>• <a href="#">Mr. C's CO2 Resources</a></li> <li>• <a href="#">Science of Speed</a></li> <li>• <a href="#">CO2 Website</a></li> </ul>	<b>13. Assess the impact of products and systems</b> <ul style="list-style-type: none"> <li>• Use collected data to find trends</li> </ul>	<ol style="list-style-type: none"> <li>1. Research CO2 racing to identify how it works, the requirements, possible design solutions, and results from previous races.</li> <li>2. Classify the body "types" of your design solutions and research the results of similar types.</li> </ol>
<b>Day 2:</b> <ul style="list-style-type: none"> <li>• <a href="#">Mr. C's CO2 Resources</a></li> <li>• <a href="#">Science of Speed</a></li> <li>• <a href="#">CO2 Design Worksheet</a></li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>9. Engineering design</b> <ul style="list-style-type: none"> <li>• Brainstorming</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Apply design process</li> </ul>	<ol style="list-style-type: none"> <li>1. Brainstorm possible design solutions using thumbnail sketches.</li> </ol>
<b>Day 3:</b> <ul style="list-style-type: none"> <li>• <a href="#">CO2 Design Worksheet</a></li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Apply design process</li> </ul>	<ol style="list-style-type: none"> <li>1. Eliminate known failures and further develop possible solutions with rough sketches.</li> </ol>
<b>Day 4:</b> <ul style="list-style-type: none"> <li>• <a href="#">CO2 Design Worksheet</a></li> <li>• <a href="#">CO2 Final Drawing</a></li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Apply design process</li> </ul>	<ol style="list-style-type: none"> <li>1. Narrow your selections and choose a design solution.</li> <li>2. Use PowerPoint to "mimic" a CAD program and design your final drawing.</li> </ol>
<b>Day 5:</b> <ul style="list-style-type: none"> <li>• <a href="#">CO2 Final Drawing</a></li> <li>• Scissors</li> <li>• Masking tape</li> <li>• CO2 dragster kits</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Apply design process</li> </ul>	<ol style="list-style-type: none"> <li>1. Use your final drawing as your pattern layout on the dragster body blank.</li> </ol>
<b>Day 6:</b> <ul style="list-style-type: none"> <li>• Drill press</li> <li>• Band saw</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Safely use the drill press to drill axle holes at a 90° angle.</li> <li>2. Safely use the band saw to cut the side view of your body design.</li> <li>3. Assemble the cutoff scraps with masking tape to prepare for the top view cuts.</li> </ol>
<b>Day 7:</b> <ul style="list-style-type: none"> <li>• Band saw</li> <li>• Dremel tools</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Safely use the band saw to cut the top view of your body design.</li> <li>2. Roughly shape the design with Dremel tools.</li> </ol>
<b>Day 8:</b> <ul style="list-style-type: none"> <li>• Course sandpaper</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Roughly shape the design with course sandpaper.</li> </ol>
<b>Day 9:</b> <ul style="list-style-type: none"> <li>• Fine sandpaper</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly smooth your design using finer grits of sandpaper.</li> </ol>
<b>Day 10:</b> <ul style="list-style-type: none"> <li>• Sanding sealer</li> <li>• Scissors</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly seal the wood grain with sanding sealer.</li> <li>2. Carefully cut the dragster decals.</li> </ol>

<b>Day 11:</b> <ul style="list-style-type: none"> <li>• Fine sandpaper</li> <li>• Sanding sealer</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly sand the seal coat on the CO2 dragster and apply a 2<sup>nd</sup> coat.</li> </ol>
<b>Day 12:</b> <ul style="list-style-type: none"> <li>• Fine sandpaper</li> <li>• Spray primer</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly sand the 2<sup>nd</sup> primer coat on the CO2 dragster and apply a light coat of primer.</li> </ol>
<b>Day 13:</b> <ul style="list-style-type: none"> <li>• Fine sandpaper</li> <li>• Spray primer</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly sand the primer coat on the CO2 dragster and apply a 2<sup>nd</sup> light coat of primer.</li> </ol>
<b>Day 14:</b> <ul style="list-style-type: none"> <li>• Fine sandpaper</li> <li>• Spray paint</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Apply design process</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly sand the 2<sup>nd</sup> primer coat on the CO2 dragster and apply a light coat of paint.</li> </ol>
<b>Day 15:</b> <ul style="list-style-type: none"> <li>• Fine sandpaper</li> <li>• Spray paint</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Apply design process</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly sand the paint on the CO2 dragster and apply a 2<sup>nd</sup> light coat of paint.</li> </ol>
<b>Day 16:</b> <ul style="list-style-type: none"> <li>• Decals</li> <li>• Clear coat</li> <li>• Fine sandpaper</li> <li>• Xacto knives</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Test and evaluate</li> </ul>	<ol style="list-style-type: none"> <li>1. Carefully plan and apply the decals.</li> <li>2. Properly apply a smooth, even coat of clear coat.</li> <li>3. Prepare the axles and wheels for racing.</li> </ol>
<b>Day 17:</b> <ul style="list-style-type: none"> <li>• Fine sandpaper</li> <li>• Spray primer</li> <li>• Race track section</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> <li>• Test and evaluate</li> </ul>	<ol style="list-style-type: none"> <li>1. Assemble the parts of the CO2 dragster.</li> <li>2. Spin and roll test the dragster to evaluate and predict its performance.</li> </ol>
<b>Day 18:</b> <ul style="list-style-type: none"> <li>• <a href="#">Mr. C's CO2 Resources</a></li> <li>• <a href="#">Science of Speed</a></li> <li>• <a href="#">Goosehead Racing</a></li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>16. Energy and power technologies</b> <ul style="list-style-type: none"> <li>• Energy can be used to work using many processes</li> </ul> <b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Use computers and calculators</li> </ul>	<ol style="list-style-type: none"> <li>1. Research the race day requirements and how it works.</li> <li>2. Use an online tool to help prepare for "driving" the CO2 dragster.</li> </ol>
<b>Day 19:</b> <ul style="list-style-type: none"> <li>• CO2 race track</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>9. Engineering design</b> <ul style="list-style-type: none"> <li>• Modeling, testing, evaluating, and modifying</li> </ul>	<ol style="list-style-type: none"> <li>1. Perform time trial races to rank your dragster for the single-elimination tournament.</li> <li>2. Make last-minute adjustments before race day.</li> </ol>
<b>Day 20:</b> <ul style="list-style-type: none"> <li>• CO2 race track</li> <li>• <a href="#">CO2 Rubric</a></li> </ul>	<b>9. Engineering design</b> <ul style="list-style-type: none"> <li>• Modeling, testing, evaluating, and modifying</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Test and evaluate</li> </ul>	<ol style="list-style-type: none"> <li>1. Compete in a single-elimination tournament.</li> <li>2. Evaluate your design solution.</li> </ol>

Module/Resources	Standard/Benchmark	Assessment
<b>Display Stand</b>	<b>Standards for Technological Literacy</b>	<b>In this lesson students will...</b>
<b>Day 1:</b> <ul style="list-style-type: none"> <li>• <a href="#">Display Stand</a></li> <li>• Ruler</li> <li>• Square</li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Identify criteria and constraints</li> <li>• Model a solution to a problem</li> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Calculate the dimensions of the display stand using the picture and the final drawing as references.</li> <li>2. Use your measurements to layout the display pattern on the lumber.</li> </ol>
<b>Day 2:</b> <ul style="list-style-type: none"> <li>• <a href="#">Display Stand</a></li> <li>• Band saw</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Manufacturing processes</li> <li>• Material use</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Safely use a band saw to cut the display walls.</li> </ol>
<b>Day 3:</b> <ul style="list-style-type: none"> <li>• <a href="#">Display Stand</a></li> <li>• Disc sander</li> <li>• Drill press</li> </ul>	<b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Safely use the disc sander to square and shape the correct dimensions.</li> <li>2. Properly use the drill press to drill a hole for the CO2 mount.</li> </ol>
<b>Day 4:</b> <ul style="list-style-type: none"> <li>• <a href="#">Display Stand</a></li> <li>• Sanding blocks</li> <li>• Screwdriver</li> <li>• Wood glue</li> <li>• Screws</li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Sand the parts smooth using the proper grit sandpaper.</li> <li>2. Assemble the parts of the display.</li> <li>3. Use fine sandpaper to prepare the surface for the finish.</li> </ol>
<b>Day 5:</b> <ul style="list-style-type: none"> <li>• <a href="#">Display Stand</a></li> <li>• Stain/Danish oil</li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly apply the finish coat.</li> </ol>

[Standards 1](#)

Module/Resources	Standard/Benchmark	Assessment
<b>Electricity</b>	<b>Standards for Technological Literacy</b>	<b>In this lesson students will...</b>
<b>Day 1:</b> <ul style="list-style-type: none"> <li>• Wire</li> <li>• Wire cutter</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Manufacturing processes</li> </ul> <b>9. Energy and power technologies</b> <ul style="list-style-type: none"> <li>• Energy is the capacity to do work</li> <li>• Energy can be used to do work using many processes</li> <li>• Power systems</li> </ul>	<ol style="list-style-type: none"> <li>1. Describe the difference between AC and DC.</li> <li>2. Measure and cut the proper wire lengths.</li> </ol>
<b>Day 2:</b> <ul style="list-style-type: none"> <li>• Cut wire</li> <li>• Wire cutter</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Manufacturing processes</li> </ul> <b>9. Energy and power technologies</b> <ul style="list-style-type: none"> <li>• Energy is the capacity to do work</li> <li>• Energy can be used to do work using many processes</li> <li>• Power systems</li> </ul>	<ol style="list-style-type: none"> <li>1. Research the meaning of “gauge” in reference to wire and electricity.</li> <li>2. Properly use a wire stripper to strip the ends of the cut wire.</li> </ol>
<b>Day 3:</b> <ul style="list-style-type: none"> <li>• Soldering safety video (not yet located)</li> <li>• Scantron test</li> </ul>	<b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Explain the proper techniques to safely solder wire and components.</li> <li>2. Demonstrate your knowledge of soldering safety.</li> </ol>
<b>Day 4:</b> <ul style="list-style-type: none"> <li>• Stripped wire</li> <li>• Soldering iron</li> <li>• Solder</li> <li>• LEDs</li> </ul>	<b>9. Energy and power technologies</b> <ul style="list-style-type: none"> <li>• Power systems</li> </ul> <b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Research the difference between a series and a parallel circuit.</li> <li>2. Safely solder the electrical components for your LED clock.</li> </ol>
<b>Day 5:</b> <ul style="list-style-type: none"> <li>• Stripped wire</li> <li>• Soldering iron</li> <li>• Solder</li> <li>• LEDs</li> <li>• Clock motor (for testing)</li> </ul>	<b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Test and evaluate</li> </ul> <b>12. Use and maintain technological products and systems</b> <ul style="list-style-type: none"> <li>• Safely use tools to diagnose, adjust, and repair</li> </ul>	<ol style="list-style-type: none"> <li>1. Safely solder the electrical components for your LED clock.</li> <li>2. Test and evaluate your final product.</li> </ol>

[Standards 1](#)

Module/Resources	Standard/Benchmark	Assessment
<b>Plastics</b>	<b>Standards for Technological Literacy</b>	<b>In this lesson students will...</b>
<b>Day 1:</b> <ul style="list-style-type: none"> <li>• <a href="#">Display Stand</a></li> <li>• Plastic</li> <li>• Ruler</li> <li>• Square</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Materials use</li> <li>• Manufacturing processes</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Calculate the dimensions of the plastic cover using the picture and the final drawing as references.</li> <li>2. Use your measurements to layout the display pattern on the lumber.</li> </ol>
<b>Day 2:</b> <ul style="list-style-type: none"> <li>• Plastic</li> <li>• Band saw</li> <li>• Disc sander</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Materials use</li> <li>• Manufacturing processes</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Safely use the band saw to cut the rough dimensions for the cover.</li> <li>2. Properly use the disc sander to square and shape the cover to the final dimensions.</li> </ol>
<b>Day 3:</b> <ul style="list-style-type: none"> <li>• Plastic cover</li> <li>• Sanding blocks</li> <li>• Wet sandpaper</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Materials use</li> <li>• Manufacturing processes</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly use the sanding blocks to prepare the edges for wet sanding.</li> <li>2. Use the wet sandpaper to prepare the edges for buffing/polishing.</li> </ol>
<b>Day 4:</b> <ul style="list-style-type: none"> <li>• Drill press</li> <li>• Polish</li> <li>• Buffing wheel</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Materials use</li> <li>• Manufacturing processes</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Mark and drill the screw holes.</li> <li>2. Safely use the buffing wheel to polish the edges to a clear finish.</li> </ol>
<b>Day 5:</b> <ul style="list-style-type: none"> <li>• Display stand</li> <li>• Plastic cover</li> <li>• Final drawing printout</li> <li>• Screwdriver</li> <li>• Brass screws</li> </ul>	<b>2. Manufacturing technologies</b> <ul style="list-style-type: none"> <li>• Materials use</li> <li>• Manufacturing processes</li> </ul> <b>11. Apply the design process</b> <ul style="list-style-type: none"> <li>• Make a product or system</li> </ul>	<ol style="list-style-type: none"> <li>1. Properly attach the cover to the display stand.</li> </ol>

[Standards 1](#)