Tire Change

Description
This Activity Plan is designed as one among many through which students will rotate in small groups. The activity involves dismounting and remounting a tire on a tire machine. Such operations are required in the automotive field whenever a different tire has to be installed on a rim/wheel or for a flat repair. Many entry- or apprentice-level mechanics are required to be quite competent in this task. This activity would definitely be considered to be a “hook” exercise, designed to draw interest into the field.

Lesson Outcomes
The student will be able to safely and correctly dismount and then remount a tire onto and off of a rim.

Assumptions
Before trying themselves, students will have been given some theory and the instructor will have demonstrated the proper procedure for changing a tire.

Terminology
Bead: the area of the tire that seals or touches the rim.

Drop centre: the area of the wheel that is inset. This area enables the tire to be installed onto the rim.

Inflation: the installation of air into the tire.

Lubricant: a specialized tire lubricant that aids in tire installation.

Rim diameter: the diameter of the rim.

Tire size: how large or small the tire is. This is always defined by tire width, tire height and rim diameter. Example: 195/80/R14.

Tire table: the area of the tire machine that the tire lies on.

Valve stem: the valve that allows installation of air into the tire.

Wheel weight: a small weight that is hammered onto the wheel in order to equalize or balance the tire.

Wheel weight hammer: a small, specialized hammer that is used to install the wheel weights onto the rim assembly.
Estimated Time
30 minutes

Recommended Number of Students
20, based on the *BC Technology Educators’ Best Practice Guide*, 2–3 students per group

Facilities
Automotive shop


**Tools**

- Tire-changing machine
- Wheel weight hammer

![Wheel weight hammer](image)

**Figure 3**—Wheel weight hammer

**Materials**

A few loose tires and rims of various sizes

**Optional**

Initially this should be attempted with tires that have a high height (i.e., high-profile tires). Later, lower profile tire changes could be attempted (lower profile tires generally require more skill with this operation).

**Resources for Both Activity Plans 12 and 13**

- **Tire removal/Replacement**—Andrada Polytechnic High School  
  [https://www.youtube.com/watch?v=BsOUTRr TTeE](https://www.youtube.com/watch?v=BsOUTRr TTeE)

- **MSCTC Tire Changing Training Video**  
  [www.youtube.com/watch?v=tmW9YJpVwO4](https://www.youtube.com/watch?v=tmW9YJpVwO4)

- **Dismount and Mount Tire Demo**  
  [www.youtube.com/watch?v=m303xb2CUjw](https://www.youtube.com/watch?v=m303xb2CUjw)

- **How to Mount and Balance a Tire**—Eric the Car Guy  
  [www.youtube.com/watch?v=8hOZXlrlujE](https://www.youtube.com/watch?v=8hOZXlrlujE)

- **Tire Balancer Demo**  
  [www.youtube.com/watch?v=bC5p08jTTvo](https://www.youtube.com/watch?v=bC5p08jTTvo)
Activity

Note: Since each tire machine functions slightly differently, refer to the manufacturer’s instructions for your specific machine. The instructions given here are just a general guideline.

Safety Warning
Installing the wrong size tire on a rim could lead to disastrous results. The tire may blow off the rim during installation and injure the installer or the tire may come off/deflate while on the car, causing an accident.

1. Deflate the tire (remove the valve core from the valve stem).
2. Remove any old wheel weights from the tire assembly.
3. Break the beads on both sides of the tires with the tire machine.
4. Lubricate the bead areas of the tire with the proper bead lubricant.
5. Place the tire assembly on top of the tire machine.
6. Secure the tire assembly to the tire machine (clamp rim).
7. Remove the outer tire bead (this is the bead on the valve stem side).
8. Remove the inner tire bead.
9. Inspect the bead area on the rim for damage and/or rust (the bead seals here). Clean the area with a wire brush if needed.
10. Inspect the bead area of the tire (look for damage).
11. Again lubricate both beads of the tire and the wheel rims.
12. Install the lower bead of the tire back onto the rim using the tire machine.
13. Install the upper bead of the tire back onto the rim using the tire machine.
14. Inflate the tire, making sure both beads are set properly. (Do not overinflate. Follow the manufacturer’s instructions about releasing the hold-down cone.)
15. Install the valve core back into the valve stem.
16. Set the tire pressures to the manufacturer’s specification (or 10 psi under max. rating).

Evaluation Guidelines
Tire Change Rubric (see next page)
## Tire Change Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Poor</th>
<th>Below Standard</th>
<th>Satisfactory</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are both beads fully broken free from the rim?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Has tire been safely and completely removed from rim without damage?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Has tire been safely and completely installed onto rim without damage?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Were both tire beads properly lubricated during removal and installation process?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Are tire pressures exactly set to manufacturer’s specifications?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>/25</strong></td>
</tr>
</tbody>
</table>