1.0 Purpose
The Abrasive Grinding Wheel Machinery Program has been implemented to establish procedures for proper mounting, inspection and working with abrasive grinding wheel machinery and to comply with the requirements of OSHA’s 1910.215 Abrasive Wheel Machinery Standard and Wisconsin Department of Commerce 32.15.

2.0 Scope
Waukesha County Technical College employees who work with, inspect or perform maintenance on abrasive wheel machinery are required to comply with the requirements of the Abrasive Grinding Wheel Machinery Program.

3.0 Responsibilities
Environmental, Health and Safety Coordinator will be the responsible for implementing and maintaining the program, ensuring abrasive grinding wheel machinery is in safe working order, conducting employee training and enforcing the requirements of the program.

Associate Deans and Department Managers will be responsible for ensuring abrasive grinding wheel machinery in their department is in safe working order, ensuring their employees complete required training as necessary, ensuring machinery is inspected per program requirements and enforcing the requirements of the program.

Instructors will be responsible for ensuring students follow the requirements of the program.

Employees will be responsible for complying with the requirements of the program, completing the required program training, and reporting machinery that is an unsafe condition to their Associate Dean or Manager.

4.0 Guarding
The College requires all machinery to be properly guarded whenever the machine is in operation. Machinery that is not properly guarded should be locked out and removed from service until the proper guarding has been properly installed. Refer to Figure 1 for the proper abrasive grinding wheel machinery guarding.

Work Rest – The work rest will be securely adjusted so that the distance from the abrasive grinding wheel and the part of the work rest is no more than 1/8 inch.

Tongue Guard - The tongue guard will be securely adjusted so that the distance from the abrasive grinding wheel and the lower lip of the tongue guard is no more than 1/4 inch.

Flange– Each grinding wheel shall be mounted between two flanges that are no less than 1/3 the diameter of the abrasive wheel. The flange shall also be dimensionally accurate and balanced with no rough surfaces or sharp edges.

Spindle / Side Guards - The spindle and side guards must be in place to protect against the spindle and spindle nut and cover 75% of the abrasive wheel.
5.0 Abrasive Grinding Wheel Machine Operating Procedures

Even when a grinding wheel is tested and equipped with all possible safety devices, grinding is still a hazardous activity. It is important to always follow these safe work practices:

- Everyone in the area should wear proper eye protection when abrasive grinding wheel machinery is in use.
- Never wear loose clothing, ties, rings or other jewelry.
- Keep long hair up or tied back.
- Stand to one side of the wheel when first turning on the power.
- Let the machine run at full speed for one minute while everyone stands clear.
- Bring the work piece slowing and smoothly into contact with the wheel (don’t bump the wheel).
- Give a cold wheel a chance to warm up.
- Do not force objects against the wheel so that the motor slows down excessively or stalls.
- Do not side grind on the flat side of a straight wheel; use wheels designed for this purpose.
- If a wheel breaks, find out why and eliminate the causes.
- Adjust the work rest so the maximum clearance from the wheel is (1/8 inch) and it is above the horizontal centerline of the wheel.
- Do not adjust the work rest while the wheel is moving.
- If a grinder appears to be defective or unsafe, have it locked out and report the problem immediately to your supervisor.
- Never operate a wheel at a speed above the manufacturer’s recommendation.
- Dispose of damaged wheels immediately.
- Keep the work area around the machine clear.
6.0 Mounting of Abrasive Grinding Wheels

Only authorized employees will be allowed to remove and mount abrasive grinding wheels. The following procedure will be used for the removal, disposal and mounting of abrasive grinding wheels.

1. Unplug and/or lockout the abrasive wheel machinery and remove the old abrasive grinding wheel. Abrasive grinding wheels that are bad shall be disposed of in the garbage.
2. Before mounting the new wheel, the wheel shall be closely visually inspected and sounded by the user (ring test) to make sure it was not damaged in transit, storage, or otherwise. Once the wheel passes the ring test it can be mounted on the grinding machinery. Reference Section 8 “Ring Test”.
3. Place the inside flange on the spindle. The flange must cover a minimum of 1/3 the diameter of the abrasive grinding wheel.
4. Place the abrasive grinding wheel on the arbor. Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions.
5. Place the outside flange on the spindle. The flange must cover a minimum of 1/3 the diameter of the abrasive grinding wheel.
6. Place the spindle and side guard back in place.
7. Adjust the work rest guard to within a 1/8 of an inch of the wheel and the tongue guard to 1/4 of an inch to the wheel.
8. Put the abrasive grinding wheel machinery back in service.

7.0 Inspection

Inspections should be conducted at the time of use and monthly. The time of use inspection is to be completed by the individual using the machinery and consists of a visual inspection of the work rest, tongue guard and of the grinding wheel.

Departments will be responsible for conducting the monthly inspection. These inspections will be documented on the Abrasive Grinding Wheel Machinery Monthly Inspection Form (Appendix A) and shall be maintained by the department for a time period of one year.

Any grinder that is not in proper working order or is not properly guarded shall be locked out until the deficiency has been corrected.

8.0 Ring Test

In addition to visual inspections, a “ring test” must be performed to identify any damage that may have taken place during storage or transport. A disintegrating wheel can cause solid wheel fragments to fly off at very high rates of speed resulting in serious injury or even death. The ring test helps identify defective grinding wheels.

A ring test is conducted by tapping the wheel gently with a light, nonmetallic implement, such as the handle of a screwdriver for light wheels or a wooden mallet for heavier wheels. The wheels should be “tapped” about 1 or 2 inches from the outer edge of the wheel (Figure O-25.
and Figure O-26). Rotate the wheel 45-degrees and repeat the test. An undamaged wheel will give a clear metallic tone. If it is cracked, there will be a hollow, "dead" sound and you will not hear a clear "ring." In this case do not use the wheel!

Wheels must be dry and free from sawdust when conducting the ring test, otherwise the sound will be deadened. It should also be noted that organic bonded wheels do not emit the same clear metallic ring as do vitrified and silicate wheels.

*Proper Ring Test Locations*

Figure O-25 Small Wheels
Figure O-26 Large Wheels

9.0 Training

Employees who use abrasive grinding wheel machinery shall complete Abrasive Grinding Wheel Machinery Safety Training Program before using this equipment and on as needed basis thereafter. The training will consist of the following information.

- Hazards of abrasive grinding wheel machinery
- Proper guarding
- Work Rests / Tongue Guard Settings
- Checking condition of wheel
- Reporting damaged wheels
- How to conduct a “Ring Test”
- How to properly mount wheels

10.0 Program Certification
The Environmental, Health and Safety Office in conjunction with the Safety Committee will audit the Abrasive Grinding Wheel Machinery Program on an annual basis. In the event additions or corrections are made to the plan, affected employees will be trained on the changes.
## Appendix A

**Waukesha County Technical College**

**Abrasive Grinding Wheel Machinery Inspection**

**Inspector:**

**Date:**

**Department:**

Inspect each piece of abrasive grinding wheel machinery in the department to ensure it complies with the requirements listed below. In the event a deficiency is found, the abrasive grinding wheel machinery will be locked out until the deficiency has been corrected.

### Standard 29 CFR 1910

<table>
<thead>
<tr>
<th>Description</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>215(a)(2) Do side guards cover the spindle, nut and flange and 75% of the wheel diameter?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>215(a)(4) Is the work rest used and kept adjusted to within 1/8-inch (0.3175cm) of the wheel?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>215(b)(9) Is the adjustable tongue guard on the top side of the grinder used and kept to within 1/4-inch (0.6350cm) of the wheel?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>215(d)(1) Is the maximum RPM rating of each abrasive wheel compatible with the RPM rating of the grinder motor?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22(a) Is cleanliness maintained around grinders?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>94(b)(2) Are dust collectors and powered exhausts provided and in proper working order on grinders used in operations that produce large amounts of dust?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>212(b) Are bench and pedestal grinders permanently mounted?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>304(f)(4) Is each electrically operated grinder effectively grounded?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>305(g)(1)(iii)(A) Are fixed or permanently mounted grinders connected to their electrical supply system with metallic conduit or other permanent method?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>305(j)(4)(ii)(F) Does each grinder have an individual on and off control switch?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Deficiencies identified: ____________________________

Completed inspection forms should be maintained by the department for a period of 1 year.