AUTOMOTIVE SUSPENSION AND STEERING

Pierce County Careers Connection
Dual Credit Articulation Agreement

Upon completion of high school courses equivalent to the following competencies:

Must complete 100% of the following:

☐ Disable supplemental restraint systems (SRS) in accordance with manufacturers' procedures.
☐ Remove and replace manual/power rack and pinion steering gear; inspect mounting bushings and brackets.
☐ Inspect manual and power steering fluid levels and condition; adjust levels in accordance with vehicle manufacturers' recommendations.
☐ Inspect, adjust, and replace power steering pump belt(s).
☐ Inspect, adjust, and replace power steering hoses and fittings.
☐ Inspect, replace, and adjust tie rods (sockets), tie rod sleeves, clamps and tie rod ends.
☐ Remove, inspect, and replace MacPherson strut or assembly, strut coil spring, and insulators.
☐ Lubricate suspensions and steering systems.
☐ Inspect and service front and/or rear wheel bearings.
☐ Diagnose, unusual tire wear patterns; determine needed repairs.
☐ Inspect tires, check and adjust air pressure.
☐ Rotate tires according to manufacturers' recommendations.
☐ Perform static and dynamic balance of wheel and tire assemblies.
☐ Dismount, inspect, repair, and remount tire on wheel.
☐ Install wheel and torque lug nuts.
☐ Measure vehicle-riding height; determine needed repairs.
☐ Check and adjust front and rear-wheel camber (where applicable); determine needed repairs.
☐ Check and adjust caster (where applicable); determine needed repairs.
☐ Check and adjust front wheel toe.
☐ Center steering wheel.
☐ Wheel alignment test.

Must complete at least 35 of the following 44 competencies:

☐ Inspect and replace steering shaft U-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel.
☐ Diagnose power rack and pinion steering gear vibration, looseness, and hard steering problems; determine needed repairs.
☐ Inspect and replace manual/power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.
☐ Diagnose power steering fluid leakage; determine needed repairs.
☐ Remove, inspect, replace power steering pump, pumps mount, pump seals and gasket.
☐ Remove, inspect, replace power steering pulley; check alignment.
☐ Flush, fill, and bleed power steering systems.
☐ Diagnose short and long arm suspension system noises, body sway, and uneven riding height problems; determine needed repairs.
☐ Diagnose MacPherson strut suspension system noises, body sway, and uneven riding height problems; determine needed repairs.
☐ Remove, inspect, and replace steering knuckle assemblies.
☐ Remove, inspect, and replace ball joints on MacPherson strut suspension systems.
☐ Remove, inspect, and replace transverse links, control arms, bushings and mounts.
☐ Remove, inspect, and replace MacPherson strut cartridge or assembly, strut coil spring, and insulators (silencers).
☐ Inspect, remove, and replace shock absorbers.
☐ Diagnose wheel/tire vibration, shimmy, and tramp problems; determine needed repairs.
☐ Diagnose tire pull (lead) problems; determine corrective actions.
☐ Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return problems; determine needed repairs.
☐ Check toe out on turns (turning radius); determine needed repairs.
☐ Check SAI (steering axis inclination) and included angle; determine needed repairs.
☐ Check and adjust rear wheel toe.
☐ Check rear wheel thrust angle; determine needed repairs.
☐ Check front wheel setback; determine needed repairs.
☐ Diagnose steering column noises, looseness, and binding problems (including tilt mechanism); determine needed repairs.
☐ Diagnose power non-rack and pinion steering gear, binding, uneven turning effort, looseness, hard steering, and fluid leakage problems; determine needed repairs.
☐ Adjust manual/power rack and pinion steering gear.
☐ Adjust manual or power non-rack and pinion worm bearing preload and sector lash.
☐ Disassemble, inspect, repair, and reassemble rack and pinion steering gear.
☐ Perform power steering system pressure test; determine needed repairs.
☐ Inspect and replace pitman arm, relay (center link/intermediate) rod, idler arm mountings and steering linkage damper.
☐ Diagnose, inspect, adjust, repair or replace components of electronically controlled steering systems.
☐ Diagnose, inspect, repair or replace components of variable-assist steering systems.
☐ Remove, inspect, and replace upper and lower control arms, bushings, shafts, and rebound bumpers.
☐ Remove, inspect, replace, and adjust strut (comprehension/tension) rods and bushings.
☐ Remove, inspect, and replace upper and lower ball joints on short and long arm suspension systems.

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- Remove, inspect, and replace short and long arm suspension system coil springs and spring insulators.
- Remove, inspect, replace, and adjust suspension system torsion bars, inspect; mounts.
- Remove, inspect, and replace stabilizer bar bushings, brackets, and links.
- Remove, inspect, and replace coil springs and spring insulators.
- Remove, inspect, and replace leaf springs, leaf spring insulators (silencers), shackles, brackets, bushings, and mounts.
- Diagnose, inspect, adjust, repair or replace components of electronically controlled suspension systems.
- Measure wheel, tire, axle, and hub run out; determine needed repairs.
- Inspect and replace front wheel drive half shafts.
- Inspect and replace front wheel drive CV boots and joints.
- Check front cradle (sub frame); determine needed repairs.

A student earning a “C” grade or better may earn college credit at the following college:

<table>
<thead>
<tr>
<th>College</th>
<th>Course</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Bates Technical College</td>
<td>AUTOM 140</td>
<td>4</td>
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<tr>
<td>Clover Park Technical College</td>
<td>AUT 149 (CIP Code 47.0604)</td>
<td>7</td>
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