

Standards and Competencies for Automotive: Suspension and Steering (Course # 5710)

	Begin-End Yr
Standard 1 - Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.	2009 -
1.1 - Develop a plan for self-improvement.	2009 -
1.2 - Participate in SkillsUSA as an integral part of classroom instruction	2009 -
1.3 - Assess client expectations.	2009 -
1.4 - Develop a working relationship with a mentor.	2009 -
Standard 2 - Students will demonstrate automotive technology safety practices, including Occupational Safety and Health Administrator (OSHA) and Environmental Protection Agency (EPA) requirements for an automotive repair facility.	2009 -
2.1 - Comply with personal and environmental safety practices	2009 -
2.2 - Use protective clothing and safety equipment used in suspension and steering servicing	2009 -
2.3 - Use fire protection equipment.	2009 -
2.4 - Follow OSHA and EPA regulations affecting suspension and steering service technology	2009 -
2.5 - Respond to safety communications referring to suspension and steering issues.	2009 -
2.6 - Pass with 100 percent accuracy a written examination relating to safety issues	2009 -
2.7 - Pass with 100 percent accuracy a performance examination relating to safety	2009 -
2.8 - Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.	2009 -
Standard 3 - Students will properly test, diagnose, service, and repair General Suspension and Steering Systems NATEF P-1 Standards 2002 IV-A(1- 4)	2009 -
3.1 - Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.	2009 -
3.2 - Identify and interpret suspension and steering concern; determine necessary action	2009 -
3.3 - Research applicable vehicle and service information, such as suspension and steering system operation, vehicle service history, service precautions, and technical service bulletins.	2009 -
3.4 - Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, calibrator decals).	2009 -
Standard 4 - Students will properly test, diagnose, service, and repair Steering Systems NATEF P-1 Standards 2002 IV-B(1- 21)	2009 -
4.1 - Disable and enable supplemental restraint system (SRS)	2009 -
4.2 - Remove and replace steering wheel; center/time supplemental restraint system (SRS) coil (clock spring)	2009 -
4.3 - Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets.	2009 -
4.4 - Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots	2009 -
4.5 - Inspect power steering fluid levels and condition.	2009 -
4.6 - Remove, inspect, replace, and adjust power steering pump belt.	2009 -
4.7 - Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps.	2009 -
4.8 - Diagnose steering column noises, looseness, and binding concerns (including tilt mechanisms); determine necessary action. P-2	2009 -
4.9 - Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action. P-2	2009 -
4.10 - Flush, fill, and bleed power steering system. P-2	2009 -
4.11 - Diagnose power steering fluid leakage; determine necessary action. P-2	2009 -
4.12 - Inspect and replace power steering hoses and fittings. P-2	2009 -
4.13 - Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper. P-2	2009 -
4.14 - Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action. P-3	2009 -
4.15 - Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action. P-3	2009 -
4.16 - Adjust manual or power non-rack and pinion worm bearing preload and sector lash. P-3	2009 -
4.17 - Remove and reinstall power steering pump. P-3	2009 -
4.18 - Remove and reinstall power steering pump pulley; check pulley and belt alignment. P-3	2009 -
4.19 - Test and diagnose components of electronically controlled steering systems using a scan tool; determine necessary action. P-3	2009 -
4.20 - Inspect and test non-hydraulic electric-power assist steering. P-3	2009 -
4.21 - Identify hybrid vehicle power steering system electrical circuits, service and safety precautions. P-3	2009 -
Standard 5 - Students will properly test, diagnose, service, and repair Suspension Systems: Front Suspension/Rear Suspension NATEF P-1 Standards 2002 IV-C-1(1- 11) C-2(1- 4)	2009 -
5.1 - Front Suspension - Diagnose short and long arm suspension system noises, body sway, and uneven riding height concerns; determine necessary action.	2009 -
5.2 - Front Suspension - Diagnose strut suspension system noises, body sway, and uneven riding height concerns; determine necessary action.	2009 -

	5.3 - Front Suspension - Remove, inspect and install upper and/or lower ball joints	2009 -
	5.4 - Front Suspension - Remove, inspect, and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount.	2009 -
	5.5 - Front Suspension - Remove, inspect and install strut rods (compression/tension) and bushings. P-2	2009 -
	5.6 - Front Suspension - Remove, inspect, and install steering knuckle assemblies. P-2	2009 -
	5.7 - Front Suspension - Remove, inspect, and install stabilizer bar bushings, brackets, and links. P-2	2009 -
	5.8 - Front Suspension - Lubricate suspension and steering systems. P-2	2009 -
	5.9 - Front Suspension - Remove, inspect, and install upper and lower control arms, bushings, shafts, and rebound bumpers. P-3	2009 -
	5.10 - Front Suspension - Remove, inspect, and install short and long arm suspension system coil springs and spring insulators. P-3	2009 -
	5.11 - Front Suspension - Remove, inspect, install, and adjust suspension system torsion bars; inspect mounts. P-3	2009 -
	5.12 - Rear Suspension - Remove, inspect, and install coil springs and spring insulators. P-2	2009 -
	5.13 - Rear Suspension - Remove, inspect, and install transverse links, control arms, bushings, and mounts. P-2	2009 -
	5.14 - Rear Suspension - Remove, inspect, and install strut cartridge or assembly, strut coil spring, and insulators (silencers). P-2	2009 -
	5.15 - Rear Suspension - Remove, inspect, and install leaf springs, leaf spring insulators (silencers), shackles, brackets, bushings and mounts. P-3	2009 -
	5.16 - Rear Suspension - Remove, inspect, install, and adjust suspension system torsion bars; inspect mounts. P-2	2009 -
Standard 6 - Students will properly test, diagnose, service, and repair Suspension Systems: Miscellaneous Service NATEF P-1 Standards 2002 IV-C-3(1-3)		2009 -
	6.1 - Inspect, remove, and replace shock absorbers	2009 -
	6.2 - Remove, inspect, and service or replace front and rear wheel bearings	2009 -
	6.3 - Test and diagnose components of electronically controlled suspension systems using a scan tool; determine necessary action. P-3	2009 -
Standard 7 - Students will properly test, diagnose, service, and repair Wheel Alignment NATEF P-1 Standards 2002 IV-D(1-12)		2009 -
	7.1 - Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action.	2009 -
	7.2 - Perform prealignment inspection; perform necessary action.	2009 -
	7.3 - Measure vehicle riding height; determine necessary action.	2009 -
	7.4 - Check and adjust front and rear wheel camber; perform necessary action.	2009 -
	7.5 - Check and adjust caster; perform necessary action.	2009 -
	7.6 - Check and adjust front wheel toe and center steering wheel.	2009 -
	7.7 - Check and adjust rear toe	2009 -
	7.8 - Check rear wheel thrust angle; determine necessary action.	2009 -
	7.9 - Check toe-out-on-turns (turning radius); determine necessary action. P-2	2009 -
	7.10 - Check SAI (steering axis inclination) and included angle; determine necessary action. P-2	2009 -
	7.11 - Check for front wheel setback; determine necessary action. P-2	2009 -
	7.12 - Check front cradle (subframe) alignment; determine necessary action. P-2	2009 -
Standard 8 - Students will properly test, diagnose, service, and repair Wheel and Tire NATEF P-1 Standards 2002 IV-E(1-13)		2009 -
	8.1 - Diagnose tire wear patterns; determine necessary action.	2009 -
	8.2 - Inspect tires; check and adjust air pressure.	2009 -
	8.3 - Rotate tires according to manufacturer's recommendations.	2009 -
	8.4 - Balance wheel and tire assembly (static and dynamic)	2009 -
	8.5 - Reinstall wheel; torque lug nuts.	2009 -
	8.6 - Inspect tire and wheel assembly for air loss; perform necessary action.	2009 -
	8.7 - Repair tire using internal patch.	2009 -
	8.8 - Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action. P-2	2009 -
	8.9 - Measure wheel, tire, axle, and hub runout; determine necessary action. P-2	2009 -
	8.10 - Diagnose tire pull (lead) problem; determine necessary action. P-2	2009 -
	8.11 - Dismount, inspect, repair, and remount tire on wheel. P-2	2009 -
	8.12 - Dismount, inspect, repair, and remount tire on wheel equipped with tire pressure sensor. P-2	2009 -
	8.13 - Inspect, diagnose, and calibrate tire pressure monitoring system. P-3	2009 -
Standard 9 - Students will demonstrate communication skills required in the automotive service industry		2009 -
	9.1 - Communicate and comprehend oral and written information typically occurring in automotive suspension and steering diagnosis and repair.	2009 -
	9.2 - Solve suspension and steering problems and make decisions using a logical process	2009 -
	9.3 - Use teamwork skills to accomplish goals, solve problems, and manage conflict within groups	2009 -
Standard 10 - Students will demonstrate interpersonal and employability skills required in the automotive service industry		2009 -
	10.1 - Infer relationships between work ethics and organizational and personal job success	2009 -
	10.2 - Develops customer service skills.	2009 -
	10.3 - Maintain a neat and orderly work area.	2009 -
	10.4 - Assess implications of diversity for communities and workplaces.	2009 -
	10.5 - Explore supervisory and management roles in the dealership or fleetshop	2009 -