South Central College

ABCT 2870  Auto Collision Mechanical II

Course Outcome Summary

Course Information

Description
This course teaches collision service techniques for chassis, electronic components, steering and suspension systems, antilock brake systems, air bags, and related vehicle safety systems.

Total Credits 3
Total Hours 80

Types of Instruction

Instruction Type Credits/Hours
Lecture
Lab

Pre/Corequisites
None

Institutional Core Competencies

Civic Engagement and Social Responsibility - Students will be able to demonstrate the ability to engage in the social responsibilities expected of a community member.

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives.[HP-I] designates an individual goal. [HP-G] designates a group goal.

2. Exhibit professionalism.

3. Comply with personal and environmental safety practices associated with clothing and the use of gloves; respiratory protection; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with
local, state, and federal safety and environmental regulations.

4. [HP-G] Inspect, remove and replace idler arm and mountings.
5. [HP-G] Inspect, remove and replace tie rod sleeves, clamps, and tie rod ends.
6. [HP-G] Inspect, remove and replace steering linkage damper.
7. [HP-G] Inspect, remove and replace upper and lower control arms.
8. [HP-G] Inspect, remove and replace upper and lower control arm bushings, shafts, and rebound bumpers.
9. [HP-G] Inspect, remove and replace upper and lower ball joints.
10. [HP-G] Inspect, remove and replace steering knuckle/spindle/hub assemblies (including bearings, races, seals, etc.).
11. [HP-G] Inspect, remove and replace front suspension system coil springs and spring insulators (silencers).
12. [HP-G] Inspect, remove, replace, and adjust suspension system torsion bars, and inspect mounts.
13. [HP-G] Inspect, remove and replace stabilizer bar bushings, brackets, and links.
14. [HP-G] Inspect, remove and replace MacPherson strut cartridge or assembly, upper bearing, and mount.
15. [HP-G] Inspect, remove, and replace rear suspension system transverse links, control arms, stabilizer bars, bushings, and mounts.
16. [HP-G] Inspect, remove, and replace suspension system leaf spring(s), leaf spring insulators (silencers), shackles, brackets, bushings, and mounts.
17. [HP-G] Inspect axle assembly for damage and misalignment.
18. [HP-G] Inspect, remove and replace shock absorbers.
19. [HP-G] Diagnose, inspect, adjust, repair or replace active suspension systems and associated lines and fittings.
20. [HP-I] Measure vehicle ride height; determine needed repairs.
21. [HP-G] Inspect, remove, replace, and align front and rear frame (cradles/sub).
22. [HP-G] Diagnose steering column damage, looseness, and binding problems (including tilt mechanisms); determine needed repairs.
23. [HP-G] Inspect, remove and replace steering shaft U-joint(s), flexible coupling(s), collapsible columns, and steering wheels.
24. [HP-G] Diagnose manual and power steering gear (non-rack and pinion type) noises, binding, uneven turning effort, looseness, hard steering, and fluid leakage problems; determine needed repairs.
25. [HP-G] Diagnose power rack and pinion steering gear noises, vibration, looseness, hard steering, and fluid leakage problems, ensure proper mounting location; determine needed repairs.
26. [HP-G] Diagnose non-MacPherson front and rear suspension system noises and body sway problems; determine needed repairs.
27. [HP-G] Diagnose MacPherson strut suspension system noises and body sway problems; determine needed repairs.
28. [HP-G] Diagnose vehicle wandering, pulling, hard steering, bump steer, memory steering, torque steering, and steering return problems; determine needed repairs.
29. [HP-I] Adjust front and rear wheel camber on suspension systems with camber adjustments.
30. [HP-I] Check front and rear wheel camber on adjustable and non-adjustable suspension systems; determine needed repairs.
32. [HP-I] Check caster on adjustable and non-adjustable suspension systems; determine needed repairs.
33. [HP-I] Check and adjust wheel toe including centering steering wheel; determine needed adjustment or repair.
34. [HP-I] Identify toe-out-on-turns (turning radius) related problems; determine needed repairs.
35. [HP-I] Identify SAI (steering axis inclination), included angle, and KPI (king pin inclination) related problems; determine needed repairs.
36. [HP-I] Identify thrust angle related problems; determine needed repairs.
37. [HP-I] Check for front wheel setback; determine needed repairs.
38. [HP-I] Diagnose tire wear patterns; determine needed repairs.
39. [HP-I] Inspect tires, identify direction of rotation and location; check and adjust air pressure.
40. [HP-G] Diagnose wheel/tire vibration, shimmy, and tramp (wheel hop) problems; determine needed repairs.
41. [HP-I] Measure wheel, tire, axle, and hub runout; determine needed repairs.
42. [HP-G] Diagnose tire pull (lead) problems; determine corrective actions.
43. [HP-I] Reinstall wheels and torque lug nuts.
44. [HP-I] Check voltages in electrical wiring circuits with a DMM (digital multimeter).
45. [HP-I] Check for voltage drop and/or current flow in electrical wiring circuits and components with a DMM (digital multimeter).
46. [HP-I] Repair electrical circuits, wiring, and connectors.
47. [HP-I] Inspect, test, and replace fusible links, circuit breakers, and fuses.
48. [HP-I] Perform battery state-of-charge test; determine needed service.
49. [HP-I] Inspect, clean, and replace battery.
50. [HP-G] Dispose of batteries and battery acid according to local, state, and federal requirements.
51. [HP-I] Perform slow/fast battery charge.
52. [HP-I] Identify programmable electrical/electronic components; record data for reprogramming before disconnecting battery.
53. [HP-I] Inspect, clean, and repair or replace battery cables, connectors, and clamps.
54. [HP-I] Inspect alignment, adjust, remove and replace alternator (generator), drive belts, pulleys, and fans.
55. [HP-I] Check operation of exterior lighting; determine needed repairs.
56. [HP-I] Aim headlamp assemblies and fog/driving lamps; determine needed repairs.
57. [HP-I] Inspect, test, and repair or replace switches, relays, bulbs, sockets, connectors, and wires of interior and exterior light circuits.
58. [HP-I] Remove and replace horn(s); check operation.
59. [HP-I] Check operation of wiper/washer systems; determine needed repairs.
60. [HP-I] Check operation of power side and tailgate window; determine needed repairs.
61. [HP-G] Inspect, remove and replace power seat, motors, linkages, cables, etc.
62. [HP-G] Inspect, remove and replace components of electric door and hatch/trunk lock.
63. [HP-G] Inspect, remove and replace components of keyless lock/unlock devices and alarm systems.
64. [HP-G] Inspect, remove and replace components of electrical sunroof and convertible top.
65. [HP-I] Check operation of electrically heated mirrors, windshields, back lights, panels, etc.; repair as necessary.
66. [HP-I] Inspect, remove and replace components of power antenna circuits.
67. [HP-I] Demonstrate the proper self-grounding procedures for handling electronic components.
68. [HP-G] Check for module communication errors using a scan tool.
70. [HP-G] Demonstrate safe disarming techniques of high voltage systems on hybrid vehicles.
71. [HP-I] Identify and perform vehicle manufacturer’s recommended procedures for inspecting or replacing restraint systems and components.
72. [HP-G] Inspect, remove, and replace seatbelt and shoulder harness assembly and components.
73. [HP-G] Inspect restraint system mounting areas for damage; repair as needed.
74. [HP-G] Verify proper operation of seat belt.
75. [HP-G] Deactivate and reactivate Supplemental Restraint System (SRS).
76. [HP-G] Inspect, remove and replace Supplemental Restraint Systems (SRS) sensors and wiring; ensure sensor orientation.
77. [HP-I] Verify that Supplemental Restraint System (SRS) is operational.
78. [HP-G] Inspect, remove, replace and dispose of deployed and non-deployed airbag(s) and pretensioners.
79. [HP-G] Use Diagnostic Trouble Codes (DTC) to diagnose and repair the Supplemental Restraint System (SRS).

SCC Accessibility Statement
South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.