



South Central College

## **ABCT 2870 Auto Collision Mechanical II**

### **Course Outcome Summary**

#### **Course Information**

<b>Description</b>	This course teaches collision service techniques for chassis, electronic components, steering and suspension systems, antilock brake systems, air bags, and related vehicle safety systems.
<b>Total Credits</b>	3
<b>Total Hours</b>	80

#### **Types of Instruction**

<b>Instruction Type</b>	<b>Credits/Hours</b>
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.
31. [HP-I] Adjust caster on suspension systems with caster adjustments.
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.
69. [HP-G] Use wiring diagrams and diagnostic flow charts during diagnosis of electrical circuit problems.
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**

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Additional information and forms can be found at: [www.southcentral.edu/disability](http://www.southcentral.edu/disability)

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