



## COLLISION DAMAGE REPAIR/REPLACEMENT

### A. Course Description

- **Credits:** 6.00
- **Lecture Hours/Week:** 1.00
- **Lab Hours/Week:** 5.00
- **OJT Hours/Week:** 0
- **Prerequisites:** None
- **Corequisites:** None
- **MnTC Goals:** None

This course will focus on sheetmetal, unitized body and full frame sectioning and replacement of parts and components. Prerequisites: ABCT1111, ABCT1212 or BSEP1301, and ABCT1120.

### B. Course Effective Dates: 8/19/02 – Present

### C. Outline of Major Content Areas

As noted on course syllabus

### D. Learning Outcomes

1. Attach body anchoring devices; remove or reposition components as necessary HP-I
2. Attach frame anchoring devices HP-I
3. Demonstrate frame/unibody spec. manual usage
4. Describe history of frame rail repair, sectioning and replacement development
5. Describe types of primary damage
6. Determine and inspect the locations of all suspension, steering, and powertrain component attaching points on the body HP-G
7. Determine the extent of damage to structural steel body panels; repair or replace HP-I
8. Determine the extent of the direct and indirect damage and the direction of impact; plan the methods and sequence of repair HP-I
9. Diagnose and analyze unibody vehicle dimensions using a tram gauge HP-I
10. Diagnose and measure structural damage using tram and self-centering gauges according to industry specifications HP-I
11. Diagnose and measure unibody vehicles using a dedicated (fixture) measuring system HP-G
12. Diagnose and measure unibody vehicles using a universal measuring system

(mechanical, electronic, laser) HP-G

13. Exhibit the utmost in professionalism
14. Identify A pillar sectioning procedures
15. Identify B pillar sectioning procedures
16. Identify body anchoring devices
17. Identify body anchoring methods
18. Identify body repair equipment maintenance procedures
19. Identify bolt on panel alignment and replacement procedures
20. Identify corrosion resistance procedures
21. Identify frame rail repair or replace principles
22. Identify heat limitations in frame repair HP-G
23. Identify laser measuring equipment
24. Identify lower rail sectioning procedures
25. Identify misaligned or damaged steering, suspension, and powertrain components that can cause vibration, steering, and 4-wheel alignment problems; realign or replace in accordance with vehicle manufacturer's specifications/procedures HP-G
26. Identify misaligned or damaged steering, suspension, and powertrain components that can cause vibration, steering, and wheel alignment problems, align or replace in accordance with vehicle manufacturer's specifications/procedures HP-G
27. Identify power train mounts
28. Identify powertrain mounts describe types of secondary damage
29. Identify quarter panel replacement procedures
30. Identify repair/replacement/sectioning sequences
31. Identify rocker panel sectioning procedures
32. Identify self-centering gauge usage
33. Identify structural damage
34. Identify structural panel types
35. Identify structural sectioning methods
36. Identify suspension mounts
37. Identify upper rail sectioning procedures
38. Perform 3 section measuring procedures
39. Perform A pillar sectioning procedures
40. Perform B pillar sectioning procedures
41. Perform body repair equipment maintenance procedures
42. Perform bolt on panel alignment and replacement
43. Perform cold stress relief methods
44. Perform lower rail sectioning procedures
45. Perform rocker panel sectioning procedures

46. Perform safe replacement and sectioning procedures
47. Perform upper rail sectioning procedures
48. Remove and replace damaged frame horns, side rails, and cross members according to manufacturer's specifications/procedures HP-G
49. Remove and replace damaged sections of structural steel body panels in accordance with manufacturer's specifications/procedures HP-G
50. Remove creases and dents using power tools and hand tools to restore damaged areas to proper contours and dimensions HP-I
51. Repair or replace weakened or cracked frame members in accordance with vehicle manufacturer's specifications/procedures HP-G
52. Repair unibody structural damage
53. Restore corrosion protection to repaired or replaced frame areas HP-G
54. Restore corrosion protection to repaired or replaced unibody structural areas HP-G
55. Straighten and align body openings, floor pans, and rocker panels HP-G
56. Straighten and align cowl assembly HP-G
57. Straighten and align diamond frame damage HP-G
58. Straighten and align front-end sections (aprons, strut towers, upper and lower rails, steering and suspension/power train mounting points, etc.) HP-G
59. Straighten and align hinge and lock pillars HP-G
60. Straighten and align mash (collapse) damage HP-G
61. Straighten and align roof rails/headers and roof panels HP-G
62. Straighten and align sag damage HP-G
63. Straighten and align sideway damage HP-G
64. Straighten and align twist damage HP-G
65. Use proper cold stress relief methods HP-G
66. Use proper heat stress relief methods in high strength steel in accordance with manufacturer specifications/procedures HP-G

**E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

**F. Learner Outcomes Assessment**

As noted on course syllabus

**G. Special Information**

None noted

