2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

I. STRUCTURAL ANALYSIS AND DAMAGE REPAIR

For every task in Structural Analysis and Damage Repair, the following safety requirement must be strictly enforced:

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. Identify vehicle system hazard types (Supplemental Restraint System (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components.

IPS00e, ISS00e, WRK01 modules 1, 2, 3, 4, 5, 6

A. Safety Precautions	Class Hrs.	Lab Hrs.	Total Hrs.
1. Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations. ***HP-I***			0
WKR01 | M4&5			
2. Locate procedures and precautions that may apply to the vehicle being repaired. ***HP-I***			0
EUS01e | FFR01 M1 | SPS10 | SPS11			
3. Identify vehicle system hazard types (supplemental restraint system (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components. ***HP-I***			0
DAM11 | ALT03 (ALT04e & ALT05e)			
4. Select and use a NIOSH approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA regulation 1910.134 and applicable state and local regulation. ***HP-I***			0
WKR01 M4			
Total Hours by NATEF Subtopic	0	0	0

B. Frame Inspection and Repair	Class Hrs.	Lab Hrs.	Total Hrs.
1. Measure and diagnose structural damage using a tram gauge. ***HP-I***			0
DAM02 v.2.1 module 1 | DAM02 v.2.2 modules 2, 3 | MEA01 modules 1, 2 | DAM12 module 1			
2. Attach vehicle to anchoring devices. ***HP-G***			0
MEA01 module 6 | SSS01 module 2			
3. Analyze, straighten and align mash (collapse) damage. ***HP-G***			0
MEA01 module 4 | SSS01 module 5			
4. Analyze, straighten and align sag damage. ***HP-G***			0
MEA01 module 4 | SSS01 module 5			
5. Analyze, straighten and align side sway damage. ***HP-G***			0
MEA01 module 4 | SSS01 module 5			
6. Analyze, straighten and align twist damage. ***HP-G***			0
MEA01 module 1 | SSS01 module 5			
7. Analyze, straighten and align diamond frame damage. ***HP-G***			0
MEA01 module 4 | SSS01 module 5			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
8. Remove and replace damaged structural components. ***HP-G***			0
SPS03 module 3, 5			
9. Replace protective coatings, restore corrosion protection to repaired or replaced frame areas and anchoring locations. ***HP-G***			0
CPS01 module 3			
10. Analyze and identify misaligned or damaged steering, suspension, and powertrain mounting points. ***HP-G***			0
DAM03 v.2.2 modules 4, 6 | DAM03 v2.4 module 6 | DAM06 module 2 | MEA01			
11. Align or replace misaligned or damaged steering, suspension, and powertrain mounting points that can cause vibration, steering, and wheel alignment problems. ***HP-G***			0
DRT01 module 5 | STE01 module 3 | STE02 modules 1, 2, 3 | STE03 modules 1, 2, 3, 4 SSS01 M1 | FFR01 M2 | MEA01			
12. Identify heat limitations and monitoring procedures for structural components. ***HP-G***			0
FCR01 , EDS01, DAM12, SPS07, SSS01			
13. Demonstrate an understanding of structural foam applications. ***HP-G***			0
FOM01 1, 2, 3, 4			
14. Measure and diagnose structural damage using a three-dimensional measuring system (mechanical, electronic, laser), etc. ***HP-G***			0
DAM02 v2.1 module 1 | DAM02 v2.2 module 3 | MEA01 module 2 | DAM12 module 1			
15. Determine the extent of the direct and indirect damage and the direction of impact; document the methods and sequence of repair. ***HP-I***			0
DAM02 v2.1 module 1,3 | DAM02 v2.2 module 2 | FCR01 v2.1 module 2 | FCR01 v2.2 module 2, 3 | SSS01 module 1 | DAM12 module 1			
16. Analyze and identify crush/collapse zones. ***HP-I***			0
SPS03 module 3 | SPS08 module 1, 3 | SPS07 module 2 | DAM12 modules 1 & 2			
Total Hours by NATEF Subtopic	0	0	0

C. Unibody and Unitized Structure Inspection, Measurement and Repair	Class Hrs.	Lab Hrs.	Total Hrs.
1. Analyze and identify misaligned or damaged steering, suspension, and powertrain mounting points that can cause vibration, steering, and chassis alignment problems. ***HP-G***			0
DAM03 v2.2 module 4, 6 | DAM03 v2.4 module 6 | DAM06 module 2			
2. Align or replace misaligned or damaged steering, suspension, and powertrain mounting points that can cause vibration, steering and chassis alignment problems. ***HP-G***			0
DRT01 module 5 | STE01 module 3 | STE02 modules 1, 2, 3 | STE03 modules 1, 2, 3, 4			
3. Measure and diagnose unibody damage using tram gauge. ***HP-I***			0
MEA01 modules 1, 2 | DAM12 module 1			
4. Measure and diagnose unibody vehicles using a dedicated (fixture) measuring system. ***HP-G***			0
MEA01 module 2			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
5. Diagnose and measure unibody vehicles using a three-dimensional measuring system (mechanical, electronic, and laser, etc.). ***HP-G***			0
MEA01 module 2			
6. Determine the extent of the direct and indirect damage and the direction of impact; plan and document the methods and sequence of repair. ***HP-I***			0
DAM02 v2.1 module 1, 3 | DAM02 v2.2 module 2 | FCR01 v2.1 module 2 FCR01 v2.2 modules 2, 3 | SSS01 module 1 | DAM12 Module 1			
7. Attach anchoring devices to vehicle; remove or reposition components as necessary. ***HP-I***			0
MEA01 module 6 | SSS01 module 2			
8. Straighten and align roof rails/headers and roof panels. ***HP-G***			0
SSS01			
9. Straighten and align rocker panels and pillars. ***HP-G***			0
EXT02 module 4 | SSS01 module 5			
10. Straighten and align vehicle openings, and floor pans. ***HP-G***			0
SPS02 v3.1 modules 3, 4 | SPS02 v3.2 modules 1, 2 | SSS01 module 5			
11. Straighten and align quarter panels, wheelhouse assemblies, and rear body sections (including rails and suspension/powertrain mounting points). ***HP-G***			0
SPS01 v3.1 modules 2, 3, 4, 6 | SPS01 v3.2 modules 1, 2 | SPS02 v3.1 modules 2, 3, 4, 5 | SPS02 v3.2 modules 1, 2, 3 | SSS01 module 5			
12. Straighten and align front-end sections (aprons, strut towers, upper and lower rails, steering, and suspension/power train mounting points, etc.). ***HP-G***			0
EXT02 module 5 | SPS01 v3.1 modules 3, 7 | SPS01 v3.2 modules 1, 2 | SSS01 module 5			
13. Identify substrate and repair or replacement recommendations. ***HP-I***			0
FCR01 module 1 | SPS07 modules 1, 2 | SSS01 module 1			
14. Identify proper cold stress relief methods. ***HP-I***			0
SPS01 v3.1 modules 3, 4 | SPS01 v3.2 modules 1, 2 | SSS01 module 3			
15. Repair damage using power tools and hand tools to restore proper contours and dimensions. ***HP-I***			0
SSS01 module 4			
16. Determine sectioning procedures of a steel body structure. ***HP-I***			0
SSS01 module 5 | SPS11 | SPS01 & SPS02 | DAM12			
17. Remove and replace damaged structural components. ***HP-G***			0
SPS01 v3.1 modules 3, 6 | SPS01 v3.2 modules 1,2 | SPS02 v3.1 modules 2, 3, 4 | SPS02 v3.2 modules 1, 2 | SPS10 | SPS11			
18. Restore corrosion protection to repaired or replaced structural areas, and anchoring locations. ***HP-I***			0
CPS01 module 3			
19. Determine the extent of damage to aluminum structural components; repair, weld, or replace. ***HP-G***			0
DAM05 module 3 | SPA01 modules 1, 2 | SSA01 modules 1, 2, 3			
20. Analyze and identify crush/collapse zones. ***HP-I***			0
SPS01 v3.1 modules 1, 4, 6 | SPS01 v3.2 modules 1, 2 | SPS07 Module 2 | DAM12 Modules 1 & 2			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

D. Stationary Glass	Class Hrs.	Lab Hrs.	Total Hrs.
1. Identify considerations for removal, handling, and installation of advanced glass systems (rain sensors, navigation, cameras, collision avoidance systems). ***HP-G***			0
GLA02 modules 1, 2, 3 | DAM07 | NEW16 | PWR01 module 2			
2. Remove and reinstall or replace modular glass using recommended materials. ***HP-G***			0
GLA02 module 3			
3. Check for water leaks, dust leaks, and wind noise. ***HP-G***			0
WNW01 module 1			
Total Hours by NATEF Subtopic	0	0	0
Total Hours by NATEF Topic	0	0	0

II. NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR

For every task in Non-Structural Analysis and Damage Repair (Body Components), the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing and the use of gloves; respiratory protection; eye protection; hearing 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. Identify vehicle system hazard types (Supplemental Restraint System (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components.

IPS00e, ISS00e, WRK01 modules 1, 2, 3, 4, 5, 6

A. Safety Precautions	Class Hrs.	Lab Hrs.	Total Hrs.
1. Select and use proper personal safety equipment; take necessary precations with hazardous operations and materials in accordance with feeral, state, and local regulations. ***HP-I***			0
WKR01 | M4&5			
2. Locate procedures and precautions that may apply to the vehicle being repaired. ***HP-I***			0
EUS01e | FFR01 M1 | SPS10 | SPS11			
3. Identify vehicle system hazard types (supplemental restraint system (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended proc dures before inspecting or replacing components. ***HP-I***			0
DAM11 | ALT03 (ALT04e & ALT05e)			
4. Select and use a NIOSH approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA regulation 1910.134 and applicable state and local regulation. ***HP-I***			0
WKR01 M4			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

B. Preparation	Class Hrs.	Lab Hrs.	Total Hrs.
1. Review damage report and analyze damage to determine appropriate methods for overall repair; develop, and document a repair plan. ***HP-I***			0
DAM01 v2.4 modules 1, 2 | DAM01 v2.5 modules 1, 2, 3, 4, 5 | DAM10 Module 1 | EXT01 module 1			
2. Inspect, remove, label, store, and reinstall exterior trim and moldings. ***HP-I***			0
DAM04 v2.1 module 4 | DAM04 module 3 | DAM10 Module 1 | TRM01 modules 3, 6, 7			
3. Inspect, remove, label, store, and reinstall interior trim and components. ***HP-I***			0
ADH01 v1.3 modules 1, 2, 3 | DAM02 v2.1 modules 1, 2, 3 | DAM02 v2.2 module 2 | EXT01 modules 1, 2, 3 4 | EXT02 modules 1, 2, 3, 4, 5			
4. Inspect, remove, label, store, and reinstall body panels and components that may interfere with or be damaged during repair. ***HP-I***			0
DAM02 v2.1 module 3 | DAM02 v2.2 module 2 | EXT01 module 2			
5. Inspect, remove, protect, label, store, and reinstall vehicle mechanical and electrical components that may interfere with or be damaged during repair. ***HP-G***			0
DAM03 v2.2 modules 1, 2, 3, 4, 5, 6 | DAM03 v2.4 modules 1,7 | DAM04 modules 1, 2, 3 | DAM06 module 2 EXT01 module 3			
6. Protect panels, glass, interior parts, and other vehicles adjacent to the repair area. ***HP-I***			0
EXT01 module 1 | EXT02 modules 1, 2, 3, 4, 5			
7. Soap and water wash entire vehicle; complete pre-repair inspection checklist. ***HP-I***			0
EDS02 module 3 | REF02 module 1 | REF04 module 1			
8. Prepare damaged area using water-based and solvent-based cleaners. ***HP-I***			0
EDS02 module 3 | REF02 module 1 | REF04 module 1			
9. Remove corrosion protection, undercoatings, sealers, and other protective coatings as necessary to perform repairs. ***HP-I***			0
DAM02 v2.1 module 2 | DAM02 v2.2 module 1 | EXT01 modules 1, 2, 3, 4 | EXT02 modules 1, 2, 3, 4, 5			
10. Inspect, remove, and reinstall repairable plastics and other components for off-vehicle repair. ***HP-I***			0
DAM02 v2.1 module 2 | DAM02 v2.2 module 1 | EXT01 modules 1, 2, 3, 4 | EXT02 modules 1, 2, 3, 4, 5			
Total Hours by NATEF Subtopic	0	0	0

C. Outer Body Panel Repairs, Replacements, and Adjustments	Class Hrs.	Lab Hrs.	Total Hrs.
1. Inspect/locate direct, indirect, or hidden damage and direction of impact. ***HP-I***			0
DAM02 v2.1 modules 1, 3 | DAM02 v2.2 module 2 | DAM12 Module 1 | EDS01 module 2 FCR v2.1 modules 2, 3 | STS01 modules 1, 2			
2. Inspect, remove and replace mechanically fastened welded steel panel or panel assemblies. ***HP-G***			0
ADH01 v1.3 modules 1, 2, 3 | DAM02 v2.1 modules 1, 2, 3 | DAM02 v2.2 module 2 | EXT01 modules 1, 2, 3, 4 | EXT02 modules 1, 2, 3, 4, 5			
3. Determine the extent of damage to aluminum body panels; repair or replace ***HP-G***			0
DAM05 module 2 | PRA01 modules 1, 2, 3, 4, 5 | STA01 modules 2, 3			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
4. Inspect, remove, replace, and align hood, hood hinges, and hood latch. ***HP-I***			0
DAM02 v2.1 module 3 | DAM02 v2.2 module 2 | EXT01 module 2			
5. Inspect, remove, replace, and align deck lid, lid hinges, and lid latch. ***HP-I***			0
DAM04 module 3 | EXT01 module 4			
6. Inspect, remove, replace, and align doors, latches, hinges, and related hardware. ***HP-I***			0
DAM04 modules 2, 3 | EXT01 modules 3, 4 | EXT02 module 2			
7. Inspect, remove, replace and align tailgates, hatches, liftgates and sliding doors. ***HP-G***			0
DAM04 modules 2, 3 | EXT01 modules 3, 4 | EXT02 module 2			
8. Inspect, remove, replace, and align bumpers, covers, reinforcements, guards, impact absorbers, and mounting hardware. ***HP-I***			0
DAM02 module 2 | EXT01 module 2 | EXT02 module 5			
9. Inspect, remove, replace and align fenders, and related panels. ***HP-I***			0
DAM02 v2.1 module 3 | DAM02 v2.2 module 2 | EXT01 module 2 | EXT02 module 5			
10. Restore corrosion protection during and after the repair. HP-I			0
CPS01 Modules 3 & 4			
11. Replace door skins. ***HP-G***			0
ADH01 v1.2 module 1 ADH01 v1.3 modules 1, 2, 3 EXT02 module 2			
12. Restore sound deadeners and foam materials.***HP-G***			0
FOM01 modules 1, 2, 3, 4			
13. Perform panel bonding and weld bonding.***HP-G***			0
ADH01 v1.2 module 1 | ADH01 v1.3 modules 1, 2, 3 | EXT02 module 2			
14. Diagnose and repair water leaks, dust leaks, and wind noise. ***HP-G***			0
FOM01 modules 1, 2, 3, 4			
15. Identify one-time use fasteners. ***HP-G***			0
TRM01			
16. Weld damaged or torn steel body panels; repair broken welds. ***HP-G***			0
WCS01 | WCS04			
Total Hours by NATEF Subtopic	0	0	0

D. Metal Finishing and Body Filling	Class Hrs.	Lab Hrs.	Total Hrs.
1. Prepare a panel for body filler by abrading or removing the coatings; featheredge and refine scratches before the application of body filler. ***HP-I***			0
EDS01 module 3 | STS01 module 2, 3			
2. Locate and repair surface irregularities on a damaged body panel using power tools, hand tools, and weld-on pulling attachments. ***HP-I***			0
DAM02 v2.1 module 3 | DAM02 v2.2 module 2 | EDS01 modules 2, 3, 4 | FCR v2.1 module 2 | FCR01 v2.2 module 3 | STS01 module 1, 2			
3. Demonstrate hammer and dolly techniques. ***HP-I***			0
EDS01 module 2 | STS01 module 2			
4. Heat shrink stretched panel areas to proper contour. ***HP-G***			0
EDS01 module 2 | STS01 module 2			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
5. Cold shrink stretched panel areas to proper contour. ***HP-I***			0
EDS01 module 2 | STS01 module 2			
6. Identify body filler defects; correct the cause and condition. (Pinholing, ghosting, staining, over catatalyzing, etc.) ***HP-I***			0
EDS01 module 3 | STS01 module 2			
7. Identify different types of body fillers. ***HP-G***			0
EDS01 module 3 | STS01 module 3			
8. Shape body filler to contour; finish sand. ***HP-I***			0
EDS01 module 3 | STS01 module 2			
9. Perform proper metal finishing techniques for aluminum. ***HP-G***			0
DAM05 module 2 | STA01 modules 2, 3			
10. Perform proper application of body filler to aluminum. ***HP-G***			0
PRA01 modules 3, 5 | STA01 module 2			
11. Straighten contours of damaged panels to a suitable condition for body filling or metal finishing using power tools, hand tools, and weld-on pulling attachments. ***HP-I***			0
EDS01 M2, STS01 M2			
Total Hours by NATEF Subtopic	0	0	0

E. Movable Glass and Hardware	Class Hrs.	Lab Hrs.	Total Hrs.
1. Inspect, adjust, repair or replace window regulators, run channels, glass power mechanisms, and related controls. ***HP-I***			0
DAM04 module 2 | GLA01 module 2 | PWR01 module 5			
2. Inspect, adjust, repair, remove, reinstall or replace weather-stripping. ***HP-G***			0
DAM04 module 2 | TRM01 module 3			
3. Inspect, repair or replace, and adjust removable power operated roof panel and hinges, latches, guides, handles, retainer, and controls of sunroofs. ***HP-G***			0
DAM04 module 2 | GLA01 module 4 | PWR01 module 5			
4. Inspect, remove, reinstall, and align convertible top and related mechanisms ***HP-G***			0
DAM04 module 2. DAM10 Module 2			
5. Initialize electrical components as needed. ***HP-G***			0
GLA01 Module 1, 4 | PWR01 module 6			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

F. Plastic and Adhesives	Class Hrs.	Lab Hrs.	Total Hrs.
1. Identify the types of plastics; determine repairability. ***HP-I***			0
DAM02 module 2 | PLA01 modules 1, 3 | PLA02 modules 1, 4 | PLA03 module 1			
2. Clean and prepare the surface of plastic parts; identify the types of plastic repair procedures. ***HP-I***			0
PLA01 modules 1, 2 | PLA02 modules 1, 2 | PLA03 mod 1			
3. Repair rigid, semi-rigid, and flexible plastic panels. ***HP-I***			0
PLA01 module 2 | PLA02 modules 2, 3 | PLA03 modules 2, 3			
4. Remove or repair damaged areas from rigid exterior composite panels. ***HP-G***			0
EXT02 module 2 | PLA02 module 3 | PLA03 module 3			
5. Replace bonded rigid exterior composite body panels; straighten or alig panel supports. ***HP-G***			0
EXT02 module 2 | PLA03 modules 3, 4			
Total Hours by NATEF Subtopic	0	0	0
TOTAL HOURS BY NATEF TOPIC	0	0	0

III. MECHANICAL AND ELECTRICAL COMPONENTS

For every task in Mechanical and Electrical Components, the following safety requirement must be strictly enforced:

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. Identify vehicle system hazard types (Supplemental Restraint System (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components.

IPS00e, ISS00e, WRK01 modules 1, 2, 3, 4, 5, 6

A. Safety Precautions	Class Hrs.	Lab Hrs.	Total Hrs.
1. Select and use proper personal safety equipment; take necessary precations with hazardous operations and materials in accordance with feeral, state, and local regulations. ***HP-I***			0
WKR01 | M4&5			
2. Locate procedures and precautions that may apply to the vehicle being repaired. ***HP-I***			0
EUS01e | FFR01 M1 | SPS10 | SPS11			
3. Identify vehicle system hazard types (supplemental restraint system (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended proc dures before inspecting or replacing components. ***HP-I***			0
DAM11 | ALT03 (ALT04e & ALT05e)			
4. Select and use a NIOSH approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA regulation 1910.134 and applicable state and local regulation. ***HP-I***			0
WKR01 M4			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

B. Suspension and Steering	Class Hrs.	Lab Hrs.	Total Hrs.
1. Perform visual inspection and measuring checks to identify steering and suspension collision damage. ***HP-G***			0
DAM06 Module 2 | STE04			
2. Identify one–time use fasteners. ***HP-I***			0
STE02 modules 1, 3			
3. Clean, inspect, and prepare reusable fasteners. ***HP-I***			0
TRM01 module 1			
4. Remove, replace, inspect or adjust power steering pump, pulleys, belts, hoses, fittings and pump mounts. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE03 module 4			
5. Remove and replace power steering gear (non-rack and pinion type). ***HP-G***			0
STE03 module 4			
6. Inspect, remove, and replace power rack and pinion steering gear and related components. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE03 module 3			
7. Inspect and replace parallelogram steering linkage components. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE03 module 2			
8. Inspect, remove and replace upper and lower control arms and related coponents. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 modules 1, 2			
9. Inspect, remove and replace steering knuckle/spindle/hub assemblies (icluding bearings, races, seals, etc.). ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE01 module 3 | STE02 module 1			
10. Inspect, remove and replace front suspension system coil springs and spring insulators (silencers). ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 modules 1, 3			
11. Inspect, remove, replace, and adjust suspension system torsion bars, amounts. ***HP-G***			0
STE02 modules 1, 3			
12. Inspect, remove and replace stabilizer bar bushings, brackets, and links. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 module 1			
13. Inspect, remove and replace MacPherson strut or assembly, upper bearing, and mount. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 module 1			
14. Inspect, remove, and replace rear suspension system transverse links, control arms, stabilizer bars, bushings, and mounts. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 module 1			
15. Inspect, remove, and replace suspension system leaf spring(s) and related components. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 module 3			
16. Inspect axle assembly for damage and misalignment. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 modules 2 & 3			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
17. Inspect, remove and replace shock absorbers. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE02 module 3			
18. Diagnose, inspect, adjust, repair or replace active suspension systems and associated lines and fittings. ***HP-G***			0
STE05 module 3 | DAM15			
19. Measure vehicle ride height and wheel base; determine necessary action. ***HP-I***			0
DAM03 v2.2 module 6 | DAM06 module 2 | DAM15 | STE05 module 3			
20. Inspect, remove, replace, and align front and rear frame (cradles/sub). ***HP-G***			0
DAM03 module 6			
21. Diagnose and inspect steering wheel, steering column, and components. ***HP-G***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE03 module 1			
22. Verify proper operation of steering systems including electronically controlled, hydraulic and electronically assisted steering systems. ***HP-G***			0
STE03 module 3 | DAM15			
23. Diagnose front and rear suspension system noises and body sway problems; determine necessary action. ***HP-G***			0
STE02 modules 1, 2			
24. Diagnose vehicle wandering, pulling, hard steering, bump steer, memory steering, torque steering, and steering return problems; determine necessary action. ***HP-G***			0
STE03 Module 4 | STE04 v5.1 module 3 & 5			
25. Demonstrate an understanding of wheel suspension and steering alignments (caster, camber, toe, SAI etc.). ***HP-G***			0
STE04 module 4			
26. Diagnose tire wear patterns; determine cause. ***HP-I***			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE01 module 2			
27. Inspect tires; identify direction of rotation and location; check tire size, tire pressure monitoring system (TPM) and adjust air pressure. HP-I			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE01 modules 1, 2, 3			
28. Diagnose wheel/tire vibration, shimmy, tire pull (lead), wheel hop problems; determine needed repairs. HP-G			0
STE01 modules 1, 2			
29. Measure wheel, tire, axle, and hub runout; determine needed repairs. HP-I			0
DAM03 v2.2 module 6 | DAM06 module 2 | STE01 modules 1, 2, 3			
30. Reinstall wheels and torque lug nuts. HP-I			0
STE01 module 2			
31. Perform initialization or calibration procedures following suspension and/or steering system repairs. HP-G			0
DAM03 | DAM15			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

C. Electrical	Class Hrs.	Lab Hrs.	Total Hrs.
1. Check for available voltage, voltage drop and current, and resistance in electrical wiring circuits and components with a DMM (digital multimeter). ***HP-I***			0
ELE01 module 1 | ELE02 module 1 | LSC01 modules 1, 2, 3, 4			
2. Repair wiring and connectors. ***HP-I***			0
ELE01 module 2 | LSC01 modules 1, 4			
3. Inspect, test, and replace fusible links, circuit breakers, and fuses. ***HP-I***			0
ELE01 module 2			
4. Perform battery state-of-charge test and slow/fast battery charge. ***HP-I***			0
LSC01 module 1			
5. Inspect, clean, repair or replace battery, battery cables, connectors clamps. ***HP-I***			0
LSC01 module 1			
6. Dispose of batteries and battery acid according to local, state, and federal requirements. ***HP-G***			0
LSC01 module 1			
7. Identify programmable electrical/electronic components and check for malfunction indicator lamp (MIL) and fault codes; record data for reprogramming before disconnecting battery. ***HP-I***			0
PWR01 Module 4 | IRP00 | ELE03			
8. Inspect alignment, adjust, remove and replace alternator (generator), drive belts, pulleys, and fans. ***HP-I***			0
LSC01 modules 3			
9. Check operation and aim headlamp assemblies and fog/driving lamps; determine needed repairs. ***HP-I***			0
LSC01 modules 4, 5			
10. Inspect, test, and repair or replace bulbs, sockets, connectors, and ground wires of interior and exterior light circuits. ***HP-I***			0
ELE01 module 2 | ELE02 module 3 | LSC01 modules 4, 5			
11. Remove and replace horn(s); check operation. ***HP-I***			0
PWR01 module 7			
12. Check operation of wiper/washer systems; determine needed repairs. ***HP-I***			0
PWR01 module 2			
13. Check operation of power side and tailgate window; determine needed repairs. ***HP-I***			0
GLA01 modules 2, 3 | PWR01 module 5			
14. Inspect, remove and replace power seat, motors, linkages, cables, etc. ***HP-G***			0
PWR01 module 4			
15. Inspect, remove and replace components of electric door and hatch/trunk lock. ***HP-G***			0
PWR01 module 5			
16. Inspect, remove and replace components of keyless lock/unlock devices and alarm systems. ***HP-G***			0
PWR01 module 5			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
17. Inspect, remove and replace components of electrical sunroof and converible/retractable hard top. ***HP-G***			0
DAM04 module 2 | GLA01 module 4			
18. Check operation of electrically heated mirrors, windshields, back lights, panels, etc.; determine needed repairs. ***HP-I***			0
DAM04 v.2.1 modules 2, 3 | DAM04 v.2.2 module 2 | GLA02 module 3 | PWR01 module 3			
19. Demonstrate self-grounding procedures (anti-static) for handling electronic components. ***HP-I***			0
ELE02 module 4 | RES01 Module 1			
20. Check for module communication errors using a scan tool. ***HP-G***			0
ELE03 module 1			
21. Use wiring diagrams, component location, and diagnostic flow charts during diagnosis of electrical circuit problems. ***HP-G***			0
ELE01 module 2			
22. Identify safe disabling techniques of high voltage systems on hybrid/electric vehicles. ***HP-G***			0
ALT01 module 3 | ALT02 module 2 | ALT03			
23. Identify potential safety and material handling concerns associated with high voltage hybrid/electric vehicle battery systems. ***HP-G***			0
ALT01 module 3 | ALT02 modules 1, 3 | ALT03			
Total Hours by NATEF Subtopic	0	0	0

D. Brakes	Class Hrs.	Lab Hrs.	Total Hrs.
1. Inspect brake lines, hoses, and fittings for damage or wear; tighten fittings and supports; replace brake lines (double flare and ISO types). ***HP-G***			0
BRA01 module 1 | DAM03 v.2.2 module 5 | DAM03 v.2.4 module 7			
2. Replace hoses, fittings, seals, and supports. ***HP-I***			0
BRA01 module 1			
3. Identify, handle, store, and fill with appropriate brake fluids. ***HP-G***			0
BRA01 module 1			
4. Bleed (manual, pressure, or vacuum) hydraulic brake system. ***HP-I***			0
ABR01 module 2 | BRA01 Module 1			
5. Pressure test brake hydraulic system; determine necessary action. ***HP-G***			0
BRA01 module 2			
6. Adjust brake shoes or pads; remove and reinstall brake drums or drum/hub assemblies. ***HP-I***			0
BRA01 module 2			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
7. Remove, clean and inspect caliper and rotor assembly and mountings for wear and damage; reinstall. ***HP-I***			0
BRA01 module 2			
8. Inspect parking brake system operation; repair or adjust as necessary; verify operation. ***HP-I***			0
BRA01 module 2			
9. Identify the proper procedures for handling brake dust. ***HP-G***			0
BRA01 module 2			
10. Check for bent or damaged brake system components. ***HP-G***			0
BRK01 module 2			
11. Demonstrate an understanding of various types of advanced braking systems (ABS, electronic parking brake, hydraulic, electronic, traction and stability control). ***HP-G***			0
ABR01 modules 1, 2, 3, 4 | DAM03 v2.6 modules 4 & 5 (DAM03 v2.5 modules 2 & 3. v2.4 module 7)			
Total Hours by NATEF Subtopic	0	0	0

E. Heating and Air Conditioning	Class Hrs.	Lab Hrs.	Total Hrs.
1. Identify and comply with environmental regulations relating to refrigerants and coolants. ***HP-G***			0
AIR01 modules 2, 3 | HEA01 module 4 | WKR01 module 6			
2. Maintain and verify correct operation of certified refrigerant recovery and recharging equipment. ***HP-G***			0
AIR01 modules 2, 3			
3. Locate and identify A/C system service ports. ***HP-I***			0
AIR01 module 3 | DAM03 v.2.2 module 1 | DAM03 v.2.4 module 2			
4. Identify refrigerant contamination, recover, label, store, and recycle refrigerant from an A/C system. ***HP-G***			0
AIR01 module 4 | DAM03 v.2.2 module 1 | DAM03 v.2.4 module 2			
5. Select refrigerant, evacuate, and recharge an A/C system; check for leaks ***HP-I***			0
AIR01 module 4 | DAM03 v.2.2 module 1 | DAM03 v.2.4 module 2			
6. Select oil type and install correct amount in A/C system. ***HP-I***			0
AIR01 module 2			
7. Inspect, adjust, and replace A/C compressor drive belts; check pulley alignment. ***HP-G***			0
DAM03 module 1			
8. Remove and replace A/C compressor; inspect, repair or replace A/C compressor mount. ***HP-G***			0
AIR01 module 5 | DAM03 v.2.2 module 1 | DAM03 v.2.4 module 2			
9. Inspect, repair or replace A/C system mufflers, hoses, lines, fittings, orifice tube, expansion valve, and seals. ***HP-G***			0
AIR01 module 5 | DAM03 v.2.2 module 1 | DAM03 v.2.4 module 2			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
10. Inspect, test, and replace A/C system condenser and mounts. ***HP-G***			0
AIR01 | DAM03 v.2.2 module 1 | DAM03 v.2.4 module 2			
11. Inspect and replace receiver/drier or accumulator/drier. ***HP-G***			0
AIR01 module 5 | DAM03 v.2.2 module 1 | DAM03 v.2.4 module 2			
12. Inspect and repair A/C component wiring. HP-G			0
AIR01 module 6 | ELE01 modules 1, 2			
13. Demonstrate an understanding of safe handling procedures associated with high voltage A/C compressors and wiring. HP-G			0
ALT02 module 1 | ALT03			
14. Inspect and protect open A/C system components from contaminants during repairs. HP-G			0
ALT02 module 1 | ALT03 | AIR03e M2 | SPS06 M1			
Total Hours by NATEF Subtopic	0	0	0

F. Cooling Systems	Class Hrs.	Lab Hrs.	Total Hrs.
1. Check engine cooling and heater system hoses and belts; determine necessary action. ***HP-I***			0
DAM03 v.2.2 module 1 | DAM03 v.2.4 modules 1, 2 | HEA01 modules 3, 7			
2. Inspect, test, remove, and replace radiator, pressure cap, coolant system components, and water pump. ***HP-G***			0
DAM03 module 1 | HEA01 module 2			
3. Recover, refill, and bleed system with proper coolant and check level of protection; leak test system and dispose of materials in accordance with EPA regulations. ***HP-I***			0
DAM03 module 1 | HEA01 modules 4, 7			
4. Remove, inspect and replace fan (both electrical and mechanical), fan sensors, fan pulley, fan clutch, and fan shroud; check operation. ***HP-G***			0
HEA01 module 1			
5. Inspect, remove, and replace auxiliary oil/fluid coolers; check oil levels. ***HP-G***			0
HEA01 module 5			
6. Demonstrate an understanding of hybrid/electric cooling systems. ***HP-G***			0
ALT01 module 1 | ALT03 Module 3			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

G. Drive Train	Class Hrs.	Lab Hrs.	Total Hrs.
1. Remove, replace, and adjust shift or clutch linkage as required. ***HP-G***			0
DRT01 module 3			
2. Remove and replace electronic sensors, wires, and connectors. ***HP-G***			0
ELE01 modules 1, 2 ELE02 module 1			
3. Remove and reinstall powertrain assembly; inspect, replace, and align powertrain mounts. ***HP-G***			0
DAM03 v.2.2 module 4 DAM03 v.2.4 module 6 DRT01 module 2, SPS06			
4. Remove and replace drive axle assembly. ***HP-G***			0
DAM03 v.2.2 module 4 | DAM03 v.2.4 module 6 | DRT01 module 4			
5. Inspect, remove and replace half shafts and axle constant velocity (CV) joints. ***HP-G***			0
DRT01 module 4			
6. Inspect, remove and replace drive shafts and universal joints. ***HP-G***			0
DAM03 v.2.2 module 4 | DAM03 v.2.4 module 6 | DRT01 module 4			
7. Demonstrate an understanding of safe handling procedures associated with high voltage powertrain components. ***HP-G***			0
ALT03 modules 2 & 3			
Total Hours by NATEF Subtopic	0	0	0

H. Fuel, Intake and Exhaust Systems	Class Hrs.	Lab Hrs.	Total Hrs.
1. Inspect, remove and replace exhaust pipes, mufflers, converters, resonators, tail pipes, and heat shields. ***HP-G***			0
DAM03 v.2.2 module 3 | DAM03 v.2.4 modules 3, 6 | DRE01 module 1 | FUE01 module 2			
2. Inspect, remove and replace fuel/DEF tank, tank filter, cap, filler hose, pump sending unit and inertia switch; inspect and replace fuel lines and hoses. ***HP-G***			0
DAM03 v.2.2 module 3 | DAM03 v.2.4 module 6 | DRE01 module 2 | FUE01 module 1			
3. Inspect, remove and replace engine components of air intake components ***HP-G***			0
DRE01 modules 1, 2			
4. Inspect, remove and replace canister, filter, vent, and purge lines of fuel vapor (EVAP) control systems. ***HP-G***			0
DRE01 module 2 | FUE01 module 1			
Total Hours by NATEF Subtopic	0	0	0

I. Restraint Systems	Class Hrs.	Lab Hrs.	Total Hrs.
1. Inspect, remove, and replace seatbelt and shoulder harness assembly and components. ***HP-G***			0
DAM11 | DAM04 module 1 | RES01 modules 3, 4			
2. Inspect restraint system mounting areas for damage; repair as needed. ***HP-G***			0
DAM04 module 1 | RES01 module 3 | DAM11			
3. Inspect the operation of the seatbelt system. ***HP-I***			0
RES01 module 3 | DAM11			

	Class Hrs.	Lab Hrs.	Total Hrs.
4. Disable and enable Supplemental Restraint System (SRS). ***HP-G***			0
RES01 module 1 | DAM11			
5. Inspect, protect, remove and replace Supplemental Restraint Systems (SRS sensors and wiring; ensure sensor orientation. ***HP-G***			0
DAM04 module 1 | RES01 module 1 | DAM11			
6. Verify that Supplemental Restraint System (SRS) is operational. ***HP-I***			0
RES01 module 2 | DAM11			
7. Inspect, remove, replace and dispose of deployed and non-deployed airbag(s) and pretensioners. ***HP-G***			0
DAM04 module 1 | RES01 modules 1, 4			
8. Use Diagnostic Trouble Codes (DTC) to diagnose and repair the Supplemental Restraint System (SRS). ***HP-G***			0
RES01 module 2			
9. Demonstrate an understanding of advanced restraint systems. ***HP-G***			0
RES02 modules 1, 2, 3, 4 | DAM11			
10. Indentify components of Supplemental Restraint Systems (SRS).***HP-G***			0
DAM11, RES01, RES02			
Total Hours by NATEF Subtopic	0	0	0
TOTAL HOURS BY NATEF TOPIC	0	0	0

IV. PAINTING AND REFINISHING

For every task in Painting and Refinishing, the following safety requirement must be strictly enforced:

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. Indentify vehicle system hazard types (Supplemental Restraint System (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components.

IPS00e, ISS00e, WRK01 modules 1, 2, 3, 4, 5, 6

A. Safety Precautions	Class Hrs.	Lab Hrs.	Total Hrs.
1. Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials according to federal, state, and local regulations. ***HP-I***			0
WKR01 | M4&5			
2. Identify safety and personal health hazards according to OSHA guidelines and the “Right to Know Law”. ***HP-I***			0
WKR01 module 1, 2, 3, 4, 5			
3. Inspect spray environment and equipment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards. ***HP-I***			0
EDS02 module 1 REF01 module 3 WKR01 module 2			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
4. Select and use a NIOSH approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA regulation 1910.134 and applicable state and local regulation. ***HP-I***			0
WKR01 M4			
5. Select and use a NIOSH approved supplied air (Fresh Air Make-up) respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation ***HP-I***			0
EDS02 module 1 REF01 module 2 WKR01 module 4			
6. Select and use the proper personal safety equipment for surface preparation, spray gun and related equipment operation, paint mixing, matching and application, paint defects, and detailing (gloves, suits, hoods, eye and ear protection, etc.). ***HP-I***			0
WKR01 M4 | EDS02 modules 1, 2, 3, 4, 5, 6, 7 | REF02 module 2 | REF03 modules 2, 4			
Total Hours by NATEF Subtopic	0	0	0

B. Surface Preparation	Class Hrs.	Lab Hrs.	Total Hrs.
1. Inspect, remove, store, protect, and replace exterior trim and components necessary for proper surface preparation. ***HP-I***			0
TRM01 modules 3, 6, 7			
2. Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants. ***HP-I***			0
EDS02 module 3 REF02 module 1 REF04 module 1			
3. Inspect and identify type of finish, surface condition, and film thickness; develop and document a plan for refinishing using a total product system ***HP-G***			0
DAM01 v.2.4 module 3 DAM01 v.2.5 module 4 EDS02 module 3 REF02 module 1			
4. Remove paint finish as needed. ***HP-I***			0
EDS02 module 3 REF02 module 2			
5. Dry or wet sand areas to be refinished. ***HP-I***			0
EDS02 module 3 REF02 module 4 REF03 module 2			
6. Featheredge areas to be refinished. ***HP-I***			0
EDS02 module 3 REF02 module 4			
7. Apply suitable metal treatment or primer in accordance with total product systems. HP-I			0
CPS01 module 3 | EDS02 module 4 | REF02 module 4			
8. Mask and protect other areas that will not be refinished. HP-I			0
EDS02 module 3 | REF02 module 2			
9. Demonstrate different masking techniques (recess/back masking, foam door type, etc.). HP-G			0
EDS02 module 3, REF02 module 2			
10. Mix primer, primer-surfacer and primer-sealer. HP-I			0
EDS02 module 4, REF01 module 5, REF02 module 4, REF03 module 4			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
11. Identify a complimentary color or shade of undercoat to improve coverage. HP-G **REF03 module 2.**			0
12. Apply primer onto surface of repaired area. HP-I **EDS02 module 4 | REF02 module 4**			0
13. Apply two-component finishing filler to minor surface imperfections. HP-I **EDS01 module 3 |STS01 module 2**			0
14. Block sand area to which primer-surfacer has been applied. HP-I **EDS02 module 4, REF02 module 4**			0
15. Dry sand area to which finishing filler has been applied. HP-I **EDS01 module 3 STS01 module 2**			0
16. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. HP-I **EDS02 module 3 | REF03 module 3**			0
17. Clean area to be refinished using a final cleaning solution. HP-I **EDS02 module 3 REF03 module 3**			0
18. Remove, with a tack rag, any dust or lint particles from the area to be refinished. HP-I **EDS02 module 5 REF02 modules 3, 4 REF03 module 4**			0
19. Apply suitable primer sealer to the area being refinished. HP-I **EDS02 module 4**			0
20. Scuff sand to remove nibs or imperfections from a sealer. ***HP-I*** **EDS02 module 4**			0
21. Apply stone chip resistant coating. ***HP-G*** **CPS01 module 4 EDS02 module 5 REF03 module 3**			0
22. Restore caulking and seam sealers to repaired areas. ***HP-G*** **CPS01 modules 3, 4 | EDS02 modules 4, 5 | REF02 module 5**			0
23. Prepare adjacent panels for blending. ***HP-I*** **EDS02 module 5 | REF02 module 4 & 5**			0
24. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials needed, preparation, and refinishing procedures. ***HP-I*** **EDS02 module 5 | REF02 modules 4**			0
25. Identify metal parts to be refinished; determine the materials needed, preparation, and refinishing procedures. ***HP-I*** **EDS02 module 4 | REF02 modules 1, 4**			0
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

C. Spray Gun and Related Equipment Operation	Class Hrs.	Lab Hrs.	Total Hrs.
1. Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, and spray environment). ***HP-I***			0
EDS02 module 2 | REF01 module 1			
2. Select spray gun setup (fluid needle, nozzle, and cap) for product being applied. ***HP-I***			0
EDS02 module 2 | REF01 module 1 | REF02 module 3			
3. Test and adjust spray gun using fluid, air and pattern control valves. ***HP-I***			0
EDS02 module 2 | REF01 module 1 | REF02 module 3			
4. Demonstrate an understanding of the operation of pressure spray equipment. ***HP-G***			0
EDS02 module 2 | REF01 module 1			
Total Hours by NATEF Subtopic	0	0	0

D. Paint Mixing, Matching, and Applying	Class Hrs.	Lab Hrs.	Total Hrs.
1. Identify color code by manufacturer's vehicle information label. ***HP-I***			0
DAM01 module 4 | EDS02 module 3 | REF03 module 1			
2. Shake, stir, reduce, catalyze/activate, and strain refinish materials. ***HP-I***			0
EDS02 modules 2, 4 REF03 module 4			
3. Apply finish using appropriate spray techniques (gun arc, angle, distance, travel speed, and spray pattern overlap) for the finish being applied. ***HP-I***			0
EDS02 module 2 | REF02 module 3			
4. Apply selected product on test or let-down panel; check for color match. ***HP-I***			0
REF03 module 2 | EDS02 module 5			
5. Apply single stage topcoat. ***HP-G***			0
EDS02 module 5 | REF03 module 4			
6. Apply basecoat/clearcoat for panel blending and panel refinishing. ***HP-I***			0
EDS02 module 5 | REF03 modules 3, 4			
7. Apply basecoat/clearcoat for overall refinishing. ***HP-G***			0
EDS02 module 5 | REF03 module 4			
8. Remove nibs or imperfections from basecoat. ***HP-I***			0
REF04 module 2			
9. Indentify product expiration dates as applicable. ***HP-G***			0
EDS02 module 6 | REF03 module 4			
10. Refinish plastic parts. ***HP-I***			0
EDS02 module 5 | REF03 modules 3, 4			
11. Apply multi-stage coats for panel blending and overall refinishing. ***HP-G***			0
EDS02 module 5 | REF03 module 4			
12. Identify and mix paint using a formula. ***HP-I***			0
EDS02 module 4 | REF01 module 5			
13. Identify poor hiding colors; determine necessary action. ***HP-G***			0
EDS02 module 6 | REF03 module 3			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
14. Tint color using formula to achieve a blendable match. ***HP-I***			0
EDS02 module 4 | REF03 module 5			
15. Identify alternative color formula to achieve a blendable match. ***HP-I***			0
EDS02 module 5 | REF03 module 2			
16. Identify the materials equipment, and preparation differences between solvent and waterborne technologies. ***HP-G***			0
REF07			
Total Hours by NATEF Subtopic	0	0	0

E. Paint Defects-Causes and Cures	Class Hrs.	Lab Hrs.	Total Hrs.
1. Identify blistering (raising of the paint surface, air entrapment); correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF03 module 3			
2. Identify a dry spray appearance in the paint surface; correct the cause(s) and the condition. ***HP-I***			0
EDS02 module 6 | REF03 module 3			
3. Identify the presence of fish-eyes (crater-like openings) in the finish; correct the cause(s) and the condition.. ***HP-I***			0
EDS02 module 6 | REF03 module 3			
4. Identify lifting; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF03 module 3			
5. Identify clouding (mottling and streaking in metallic finishes); correct the cause(s) and the condition. ***HP-I***			0
EDS02 module 6			
6. Identify orange peel; correct the cause(s) and the condition.. ***HP-I***			0
EDS02 module 6 | REF03 module 3 | REF04 module 2			
7. Identify overspray; correct the cause(s) and the condition. ***HP-I***			0
DAM01 v.2.4 module 3 | DAM01 v.2.5 module 4 | EDS02 module 6 | REF04 module 2			
8. Identify solvent popping in freshly painted surface; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF03 module 3			
9. Identify sags and runs in paint surface; correct the cause(s) and the condition. ***HP-I***			0
EDS02 module 6 REF03 module 3 REF04 module 2			
10. Identify sanding marks or sandscratch swelling; correct the cause(s) and the condition. ***HP-I***			0
DAM01 v.2.4 module 3 | DAM01 v.2.5 module 4 | EDS02 module 6 | REF03 module 3 | REF04 module 2			
11. Identify contour mapping/edge mapping; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF02 module 1			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
12. Identify color difference (off-shade); correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF03 module 1			
13. Identify tape tracking; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF03 module 3			
14. Identify low gloss condition; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF03 module 3 | REF04 module 2			
15. Identify poor adhesion; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 |REF03 module 3			
16. Identify paint cracking (shrinking, splitting, crowsfeet or line-checking, micro checking, etc.); correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6			
17. Identify corrosion; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF02 module 3 | REF03 module 3			
18. Identify dirt or dust in the paint surface; correct the cause(s) and the condition. ***HP-I***			0
DAM01 v.2.4 module 3 | DAM01 v.2.5 module 4 | EDS02 module 6 | REF03 module 3 | REF04 modules 1, 2			
19. Identify water spotting; correct the cause(s) and the condition. ***HP-G***			0
REF04 module 2			
20. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition. ***HP-G***			0
DAM01 v.2.4 module 3 | DAM01 v.2.5 module 4 | REF04 module 2			
21. Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition. ***HP-G***			0
DAM01 v.2.4 module 3 | DAM01 v.2.5 module 4 | REF04 module 2			
22. Identify die-back conditions (dulling of the paint film showing haziness); correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6 | REF03 module 3			
23. Identify chalking (oxidation); correct the cause(s) and the condition.. ***HP-G***			0
EDS02 module 6			
24. Identify bleed-through (staining); correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6			
25. Identify pin-holing; correct the cause(s) and the condition. ***HP-G***			0
EDS02 module 6			
26. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. ***HP-I***			0
REF04 module 2			
27. Identify pigment flotation (color change through film build); correct the cause(s) ***HP-G***			0
EDS02 module 6 REF03 module 3			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

F. Final Detail	Class Hrs.	Lab Hrs.	Total Hrs.
1. Apply decals, transfers, tapes, woodgrains, pinstripes (painted and taped), etc. ***HP-G***			0
TRM01 module 4			
2. Sand, buff and polish fresh or existing finish to remove defects as required ***HP-I***			0
REF04 module 2			
3. Clean interior, exterior, and glass. ***HP-I***			0
REF04 module 3			
4. Clean body openings (door jambs and edges, etc.). H***P-I***			0
REF04 module 3			
5. Remove overspray. ***HP-I***			0
EDS02 module 6 | REF04 module 2			
6. Perform vehicle clean-up; complete quality control using a checklist. ***HP-I***			0
REF04 module 3			
Total Hours by NATEF Subtopic	0	0	0
TOTAL HOURS BY NATEF TOPIC	0	0	0

V. DAMAGE ANALYSIS, ESTIMATING AND CUSTOMER SERVICE

For every task in Damage Analysis, Estimating and Customer Service, the following safety requirement must be strictly enforced:

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. Identify vehicle system hazard types (Supplemental Restraint System (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components.

IPS00e, ISS00e, WRK01 modules 1, 2, 3, 4, 5, 6

A. Safety Precautions	Class Hrs.	Lab Hrs.	Total Hrs.
1. Select and use proper personal safety equipment; take necessary precations with hazardous operations and materials in accordance with feeral, state, and local regulations. ***HP-I***			0
WKR01 | M4&5			
2. Locate procedures and precautions that may apply to the vehicle being repaired. ***HP-I***			0
EUS01e | FFR01 M1 | SPS10 | SPS11			
3. Identify vehicle system hazard types (supplemental restraint system (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended proc dures before inspecting or replacing components. ***HP-I***			0
DAM11, ALT03 (ALT04e & ALT05e)			
4. Select and use a NIOSH approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA regulation 1910.134 and applicable state and local regulation. ***HP-I***			0
WKR01 module 4			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

B. Damage Analysis	Class Hrs.	Lab Hrs.	Total Hrs.
1. Position the vehicle for inspection. ***HP-G***			0
DAM01 module 3 | DAM10 module 1			
2. Prepare vehicle for inspection by providing access to damaged areas. ***HP-G***			0
DAM01 module 3			
3. Analyze damage to determine appropriate methods for overall repairs. ***HP-I***			0
DAM01 module 3 | DAM10 module 1, 2 | DAM12			
4. Determine the direction, point(s) of impact, and extent of direct, indirect, and inertia damage. ***HP-G***			0
DAM01 module 3 | DAM10 module 1 | DAM12			
5. Gather details of the incident/accident necessary to determine the full extent of vehicle damage. ***HP-G***			0
DAM01 module 3 | DAM10 module 1			
6. Identify and record pre-existing damage. ***HP-I***			0
DAM01 module 3			
7. Identify and record prior repairs. ***HP-G***			0
DAM01 module 4			
8. Perform visual inspection of structural components. ***HP-G***			0
DAM01 Module 3 | DAM12			
9. Identify structural damage using measuring tools and equipment. ***HP-I***			0
DAM01 module 3 | DAM12 | MEA01			
10. Perform visual inspection of non-structural components. ***HP-I***			0
DAM01 module 3 | DAM10 module 1			
11. Determine parts, components, material type(s) and procedures necessary for a proper repair. ***HP-I***			0
DAM01 module 3 | DAM05 | DAM10 | DAM12			
12. Identify type and condition of finish; determine if refinishing is required. ***HP-I***			0
DAM01 module 4			
13. Identify suspension, electrical, and mechanical component physical damage. ***HP-G***			0
ELE01, DAM03, DAM06			
14. Identify safety systems physical damage. ***HP-G***			0
DAM11 | DAM03			
15. Identify interior component damage. ***HP-I***			0
DAM04			
16. Identify damage to add-on accessories and modifications. ***HP-G***			0
DAM01 | DAM10			
17. Identify single (one time) use components. ***HP-G***			0
TRM01			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

C. Estimating	Class Hrs.	Lab Hrs.	Total Hrs.
1. Determine and record customer/vehicle owner information. ***HP-I***			0
DAM01 module 2			
2. Identify and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant. ***HP-I***			0
DAM01 module 3			
3. Identify and record vehicle mileage and options, including trim level, paint code, transmission, accessories, and modifications. ***HP-I***			0
DAM01 module 4			
4. Identify safety systems; determine replacement items. ***HP-G***			0
DAM01 module 5 | DAM03 | DAM11			
5. Apply appropriate estimating and parts nomenclature (terminology). ***HP-I***			0
DAM01 module 3 , 4 , 5			
6. Determine and apply appropriate estimating sequence. ***HP-I***			0
DAM01 module 3			
7. Utilize estimating guide procedure pages. ***HP-I***			0
DAM01 module 1			
8. Apply estimating guide footnotes and headnotes as needed. ***HP-I***			0
DAM01 module 3			
9. Identify operations requiring labor value judgment. ***HP-G***			0
DAM01 module 3 | IRT00 (activities & demos)			
10. Select appropriate labor value for each operation (structural, non-structural, mechanical, and refinish). ***HP-I***			0
DAM01 module 3 , 4 , 5			
11. Select and price OEM parts; verify availability, compatibility, and condition. ***HP-G***			0
DAM01 module 3			
12. Select and price alternative/optional OEM parts; verify availability, compatibility and condition. ***HP-G***			0
DAM01 module 3			
13. Select and price aftermarket parts; verify availability, compatibility, and condition. ***HP-G***			0
DAM01 module 3			
14. Select and price recyclable/used parts; verify availability, compatibility an condition. ***HP-G***			0
DAM01 module 3			
15. Select and price remanufactured, rebuilt, and reconditioned parts; verify availability, compatibility and condition. ***HP-G***			0
DAM01 module 3			
16. Determine price and source of necessary sublet operations. ***HP-G***			0
DAM01 module 5			
17. Determine labor value, prices, charges, allowances, or fees for non-included operations and miscellaneous items. ***HP-G***			0
DAM01 module 3, 4, 5			
18. Recognize and apply overlap deductions, included operations, and additions ***HP-I***			0
DAM01 module 3 body, module 4 Refinish, sealers, nvh			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
19. Determine additional material and charges. ***HP-G***			0
DAM01 module 3			
20. Determine refinishing material and charges. ***HP-I***			0
DAM01 module 4 | IRT00			
21. Apply math skills to establish charges and totals. ***HP-I***			0
DAM01 module 5			
22. Identify procedural differences between computer generated and manually written estimates. ***HP-G***			0
n/a			
23. Identify procedures to restore corrosion protection; establish labor values, and material charges. ***HP-G***			0
DAM01 module 4 | CPS01			
24. Determine the cost effectiveness of the repair and determine the approximate vehicle retail, and repair value. ***HP-G***			0
IRP00 (activity & demos)			
25. Recognize the differences in estimation procedures when using different information provider systems. ***HP-G***			0
n/a			
26. Verify accuracy of estimate compared to the actual repair and replacement operations.***HP-G***			0
QUA01 module 3			
Total Hours by NATEF Subtopic	0	0	0

D. Vehicle Construction and Parts Identification	Class Hrs.	Lab Hrs.	Total Hrs.
1. Identify type of vehicle construction (space frame, unibody, body-over frame). ***HP-G***			0
IVT02 | FCR01			
2. Recognize the different damage characteristics of space frame, unibody, and body-over-frame vehicles. ***HP-G***			0
IVT02 | FCR01			
3. Identify impact energy absorbing components. ***HP-G***			0
ICM00e | SPS07 module 1 | DAM10 DAM12			
4. Identify steel types; determine repairability. ***HP-G***			0
ICM00e | SPS07 module 1 | SSS01			
5. Identify aluminum/magnesium components; determine repairability. ***HP-G***			0
ICM00e | DAM05 module 1 | DAM12 module 2			
6. Identify plastic/composite components; determine repairability. ***HP-G***			0
ICM00e | PLA03			
7. Identify vehicle glass components and repair/replacement procedures. ***HP-G***			0
IVT02e | ITM01e | GLA01 | GLA02			
8. Identify add-on accessories. ***HP-G***			0
TRM01 module 6 | DAM10 module 3			
Total Hours by NATEF Subtopic	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

E. Customer Relations and Sales Skills	Class Hrs.	Lab Hrs.	Total Hrs.
1. Acknowledge and/or greet customer/client. ***HP-I***			0
IRP00 (activities & demos)			
2. Listen to customer/client; collect information and identify customers/client's concerns, needs and expectations. ***HP-I***			0
CUS01 module 1			
3. Establish cooperative attitude with customer/client. ***HP-I***			0
CUS01 module 1			
4. Identify yourself to customer/client; offer assistance. ***HP-I***			0
IRP00 (activities & demos)			
5. Deal with angry customer/client. H***P-I***			0
CUS01 module 1			
6. Identify customer/client preferred communication method; follow up to keep customer/client informed about parts and the repair process. ***HP-G***			0
DAM01			
7. Recognize basic claims handling procedures; explain to customer/client. ***HP-G***			0
IRP00e			
8. Project positive attitude and professional appearance. ***HP-I***			0
IRP00 (activities & demos)			
9. Provide and review warranty information. ***HP-I***			0
IRP00e			
10. Provide and review technical and consumer protection information. ***HP-G***			0
IRP00e			
11. Estimate and explain duration of out-of-service time. ***HP-G***			0
12. Demonstrate negotiation skills to obtain a mutual agreement. ***HP-G***			0
CUS01 module 1			
13. Interpret and explain manual or computer-assisted estimate to customer/client. ***HP-I***			0
DAM01 module 1			
Total Hours By NATEF Subtopic	0	0	0
TOTAL HOURS BY NATEF TOPIC	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

IV. WELDING, CUTTING AND JOINING

For every task in Welding, Cutting and Joining the following safety requirement must be strictly enforced:

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. Identify vehicle system hazard types (Supplemental Restraint System (SRS), Hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components.

A. Safety Precautions	Class Hrs.	Lab Hrs.	Total Hrs.
1. Select and use proper personal safety equipment; take necessary precations with hazardous operations and materials in accordance with feeral, state, and local regulations. ***HP-I***			0
WKR01 | M4&5			
2. Locate procedures and precautions that may apply to the vehicle being repaired. ***HP-I***			0
EUS01e | FFR01 M1 | SPS10 | SPS11 | EXT02			
3. Identify vehicle system hazard types (supplemental restraint system (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended proc dures before inspecting or replacing components. ***HP-I***			0
DAM11 | ALT05e | ALT03			
4. Select and use a NIOSH approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA regulation 1910.134 and applicable state and local regulation. ***HP-I***			0
WKR01 M4			
Total Hours by NATEF Subtopic	0	0	0

B. Metal, Welding, Cutting and Joining	Class Hrs.	Lab Hrs.	Total Hrs.
1. Identify the considerations for cutting, removing, and welding various types of steel, aluminum, and other metals. ***HP-G***			0
FRC01 module 1 | EUS01e | WCS01 | WCS06e | WCA01			
2. Determine the correct GMAW welder type, electrode/wire type, diameter, and gas to be used in a specific welding situation ***HP-I***			0
SPS07 modules 1, 2 | WCS01 v1.2 modules 1, 2, 3, 4 | WCS01 v1.3 modules 1, 2, 3, 4, 5 | EUS01e | WCS06e | WCA01			
3. Set up, attach work clamp (ground), and adjust the GMAW welder to "tune" for proper electrode stickout, voltage, polarity, flow rate, and wire-feed speed required for the substrate being welded. ***HP-I***			0
WCA01 modules 1, 2 | WCS01 module 1			
4. Store, handle, and install high-pressure gas cylinders; test for leaks. ***HP-I***			0
WCS01 module 1			

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

	Class Hrs.	Lab Hrs.	Total Hrs.
5. Determine the proper angle of the gun to the joint and direction of gun travel for the type of weld being made. ***HP-G***			0
WCS01 v2.1 module 1 | WCS01 v1.3 modules 1, 2, 3, 4, 5 | WCA01			
6. Protect adjacent panels, glass, vehicle interior, etc., from welding and cutting operations. ***HP-I***			0
WCS01 module 1			
7. Identify hazards; foam coatings and flammable materials prior to welding/ cutting procedures. ***HP-G***			0
WCS01 module 1			
8. Protect computers and other electronics/wires during welding procedures. ***HP-I***			0
WCS01 module 1 | WCA01			
9. Clean and prepare the metal to be welded, assure good metal fit-up, apply weld-through primer if necessary, clamp or tack as required. ***HP-I***			0
SPS01 v3.1 module 1 | SPS01 v3.2 modules 1, 2 | SPS02 v3.1 module 1 | SPS03 modules 2, 3 | WCA01			
10. Determine the joint type (butt weld with backing, lap, etc.) for weld being made. ***HP-I***			0
SPS01 v3.1 module 1 | SPS01 v3.2 modules 1, 2 | SPS02 v3.1 module 1 | SPS03 modules 2, 3 | WCA01			
11. Determine the type of weld (continuous, stitch weld, plug, etc.) for each specific welding operation. ***HP-I***			0
SPS01 v3.1 module 1 | SPS01 v3.2 modules 1, 2 | SPS02 v3.1 module 1 | SPS03 modules 2, 3			
12. Perform the following welds: plug, butt weld with and without backing, and fillet, etc., in the flat, horizontal, vertical, and overhead positions. HP-I			0
WSC01 v1.2 modules 2, 3, 4 WCS01 v1.3 modules 1, 2, 3, 4, 5. WCA01			
13. Perform visual evaluation and destructive test on each weld type. HP-I			0
WSC01 v1.2 modules 2, 3, 4 WSC01 v1.3 modules 2, 3, 4, 5. WCA01			
14. Identify the causes of various welding defects; make necessary adjustments. HP-I			0
WSC01 v1.2 modules 2, 3, 4 | WCS01 v1.3 modules 1, 2, 3, 4, 5 | WCA01			
Total Hours by NATEF Subtopic	0	0	0

	Class Hrs.	Lab Hrs.	Total Hrs.
15. Identify cause of contact tip burn-back and failure of wire to feed; make necessary adjustments. HP-I			0
WSC01 v1.2 modules 2, 3, 4 | WSC01 v1.3 modules 2, 3, 4, 5 | WCA01			
16. Identify cutting process for different substrates and locations; perform cutting operation. HP-I			0
SPS07 modules 1. 2 WCS05 module 4. SPS01 , SPS02. DAM05, EXT02			
17. Identify different methods of attaching structural components (squeeze type resistance spot welding (STRSW), riveting, structural adhesive, MIG bronze, etc.). HP-G			0
SPS07 | EXT02			
Total Hours by NATEF Subtopic	0	0	0
TOTAL HOURS BY NATEF TOPIC	0	0	0

2016 I-CAR CTE CURRICULUM CROSSWALK

NATEF Collision Repair/Refinishing Standards

Task List Priority Item Totals (by area)	HP-I	HP-G
I. Structural Analysis and Damage Repair		
95% = 15 tasks	16	
90% = 24 tasks		27
II. Welding, Cutting, and Joining		
95% = 16 tasks	17	
90% = 3 tasks		4
III. Non-Structural Analysis and Damage Repair (Body Components)		
95% = 29 tasks	31	
90% = 18 tasks		20
IV. Mechanical and Electrical Components		
95% = 35 tasks	37	
90% = 66 tasks		73
V. Painting and Refinishing		
95% = 50 tasks	53	
90% = 28 tasks		31
VI. Damage Analysis, Estimating, Customer Service (DAECS)		
95% = 28 tasks	30	
90% = 34 tasks		38