

## **AUTOMOTIVE COLLISION REPAIR TECHNOLOGY**

### **ACTIVITY COURSE CODES: 6020, 6021, 6022, 6023**

**PROGRAM DESCRIPTION:** The Automotive Collision Repair Technology program is designed to prepare students to repair automobiles and light commercial vehicles under the supervision of an experienced automotive collision repair technician. Automotive Collision Repair Technology students receive instruction in frame alignment, surface finishing, and shop management. Upon successful completion of the program standards, the student will have the opportunity to acquire I-CAR Pro Level 1, be prepared for postsecondary education, and entry-level automotive collision repair-related careers. Program standards are based on ASE, Vehicle Manufacturers, and I-CAR industry standards.

**OBJECTIVE:** Given the necessary equipment, materials, and instruction, students, on completion of the prescribed course of study, will be able to successfully accomplish the following core competencies.

**COURSE CREDIT:** 1 (120 hours), 2 (240 hours) per course code

**RESOURCES:** [S.C. Instructional Materials](#), beginning on pg. 98, also see Materials and Resources

**COMPUTER ACCESS:** 1 computer per student

**MAXIMUM ENROLLMENT:** 16 – 20 per instructor

#### **A. SHOP AND PERSONAL SAFETY**

**Effective automotive professionals know the academic subject matter, including safety as required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in the Automotive Collision program of study.**

1. Identify general shop safety rules and procedures.
2. Utilize safe procedures for handling power tools and equipment.
3. Identify and use proper placement of floor jacks and jack stands.
4. Identify and use proper procedures for safe lift operation.
5. Utilize proper ventilation procedures for working within the lab/shop area.
6. Identify marked safety areas.
7. Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.
8. Identify the location and use of eye wash stations.
9. Identify the location of the posted evacuation routes.
10. Comply with the required use of safety glasses, ear protection, gloves, and shoes during

lab/shop activities.

11. Identify and wear appropriate clothing for lab/shop activities.
12. Secure hair and jewelry for lab/shop activities.
13. Locate and demonstrate knowledge of material safety data sheets (MSDS).
14. Demonstrate understanding of “right to know” laws including OSHA regulations and EPA Rule 40.
15. Successfully complete a written/online safety exam.
16. 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.
17. Identify vehicle manufacturer’s SRS types, locations and recommended procedures before inspecting or replacing components.

## **B. STUDENT ORGANIZATIONS**

**Effective professionals know the academic subject matter, including professional development, required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in the Automotive Collision program of study.**

1. Identify the purpose and goals of a Career and Technology Student Organization (CTSO).
2. Explain how CTSOs are integral parts of specific clusters, majors, and/or courses.
3. Explain the benefits and responsibilities of being a member of a CTSO.
4. List leadership opportunities that are available to students through participation in CTSO conferences, competitions, community service, philanthropy, and other activities.
5. Explain how participation in CTSOs can promote lifelong benefits in other professional and civic organizations.

## **C. TECHNOLOGY KNOWLEDGE**

**Effective professionals know the academic subject matter, including digital citizenship the ethical use of technology and as needed in their role. The following accountability criteria are considered essential for in the Automotive Collision program of study.**

1. Demonstrate proficiency and skills associated with the use of technologies that are common to a specific occupation (e.g., keying speed).
2. Identify proper netiquette when using e-mail, social media, and other technologies for communication purposes.
3. Identify potential abuse and unethical uses of laptops, tablets, computers, and/or networks.
4. Explain the consequences of social, illegal, and unethical uses of technology (e.g., cyberbullying, piracy; illegal downloading; licensing infringement; inappropriate uses of software, hardware, and mobile devices in the work environment).
5. Discuss legal issues and the terms of use related to copyright laws, fair use laws,

and ethics pertaining to downloading of images, photographs, documents, video, sounds, music, trademarks, Creative Commons, and other elements for personal use.

6. Describe ethical and legal practices of safeguarding the confidentiality of business- and personal-related information.
7. Describe possible threats to a laptop, tablet, computer, and/or network and methods of avoiding attacks.
8. Evaluate various solutions to common hardware and software problems.

#### **D. PERSONAL QUALITIES AND EMPLOYABILITY SKILLS**

**Effective professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for in the Automotive Collision program of study.**

1. Demonstrate punctuality.
2. Demonstrate self-representation.
3. Demonstrate work ethic.
4. Demonstrate respect.
5. Demonstrate time management.
6. Demonstrate integrity.
7. Demonstrate leadership.
8. Demonstrate teamwork and collaboration.
9. Demonstrate conflict resolution.
10. Demonstrate perseverance.
11. Demonstrate commitment.
12. Demonstrate a healthy view of competition.
13. Demonstrate a global perspective.
14. Demonstrate health and fitness.
15. Demonstrate self-direction.
16. Demonstrate lifelong learning.

#### **E. PROFESSIONAL KNOWLEDGE**

**Effective professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for in the Automotive Collision program of study.**

1. Demonstrate effective speaking and listening skills.
2. Demonstrate effective reading and writing skills.
3. Demonstrate mathematical reasoning.
4. Demonstrate job-specific mathematics skills.
5. Demonstrate critical-thinking and problem-solving skills.
6. Demonstrate creativity and resourcefulness.

7. Demonstrate an understanding of business ethics.
8. Demonstrate confidentiality.
9. Demonstrate an understanding of workplace structures, organizations, systems, and climates.
10. Demonstrate diversity awareness.
11. Demonstrate job acquisition and advancement skills.
12. Demonstrate task management skills.
13. Demonstrate customer-service skills.

## **F. VEHICLE CONSTRUCTION AND COLLISION ENERGY MANAGEMENT**

**Proficient automotive professionals demonstrate knowledge in various types of vehicle construction and collision energy management principles, as required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in the Automotive Collision program of study.**

1. Describe various types of vehicle construction, i.e., space frame, body-over-frame, and uni-body.
2. Identify structural parts and cosmetic parts.
3. Demonstrate knowledge of collision energy management principles.

## **G: NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (B3)**

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

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

### **Unit A. Preparation**

- 1.** Review damage report and analyze damage to determine appropriate methods for overall repair; develop and document a repair plan. **HP-I**, 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**, 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**, 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**, DAM02 v2.1 module 3 | DAM02 v2.2 module 2 | EXT01 module 2
- 5.** Inspect, remove, label, store, and reinstall vehicle mechanical and electrical components that may interfere with or be damaged during repair. **HP-G**, 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**, EXT01 module 1 | EXT02 modules 1, 2, 3, 4, 5

**7.** Soap and water wash entire vehicle; complete pre-repair inspection checklist. **HP-I**, EDS02 module 3 | REF02 module 1 | REF04 module 1

**8.** Prepare damaged area using water-based and solvent-based cleaners. **HP-I**, 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**, 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** DAM02 v2.1 module 2 | DAM02 v2.2 module 1 | EXT01 modules 1, 2, 3, 4 | EXT02 modules 1, 2, 3, 4, 5

## **Unit B. Outer Body Panel Repairs, Replacements, and Adjustments**

**1.** Determine the extent of direct and indirect/hidden damage and direction of impact; develop and document a repair plan. **HP-I**, 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 bolted, bonded, and welded steel panel or panel assemblies. **HP-G**, 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**, DAM05 module 2 | PRA01 modules 1, 2, 3, 4, 5 | STA01 modules 2, 3

**4.** Inspect, remove, replace, and align hood, hood hinges, and hood latch. **HP-I**, 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**, DAM04 module 3 | EXT01 module 4

**6.** Inspect, remove, replace, and align doors, latches, hinges, and related hardware. **HP-I**, 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**, DAM04 modules 2, 3 | EXT01 modules 3, 4 | EXT02 module 2

**8.** Inspect, remove, replace, and align bumper bars, covers, reinforcement, guards, isolators, and mounting hardware. **HP-I**, DAM02 module 2 | EXT01 module 2 | EXT02 module 5

9. Inspect, remove, replace and align fenders, and related panels. **HP-I**, DAM02 v2.1 module 3 | DAM02 v2.2 module 2 | EXT01 module 2 | EXT02 module 5
10. Straighten contours of damaged panels to a suitable condition for bodyfilling or metal finishing using power tools, hand tools, and weld-on pulling attachments. **HP-I**, EDS01 modules 2, 3 | STS01 module 2
11. Weld damaged or torn steel body panels; repair broken welds. **HP-G**, EDS02 module 3
12. Restore corrosion protection. **HP-I**, CPS01 modules 3, 4
13. Replace door skins. **HP-G**, ADH01 v1.2 module 1 | ADH01 v1.3 modules 1, 2, 3 | EXT02 module 2
14. Restore sound deadeners and foam materials. **HP-G**, FOM01 modules 1, 2, 3, 4
15. Perform panel bonding and weld bonding. **HP-G**, ADH01 v1.2 module 1 ADH01 modules 1, 2, 3
16. Diagnose and repair water leaks, dust leaks, and wind noise. **HP-G**, WNW01 modules 1, 2, 3
17. Identify one-time use fasteners. **HP-G**, TRM01 module 1

### **Unit C. Metal Finishing and Body Filling**

1. Remove paint from the damaged area of a body panel. **HP-I**, EDS01 module 3 | STS01 module 2
2. Locate and repair surface irregularities on a damaged body panel. **HP-I**, 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**, EDS01 module 2 | STS01 module 2
4. Heat shrink stretched panel areas to proper contour. **HP-I**, EDS01 module 2 | STS01 module 2
5. Cold shrink stretched panel areas to proper contour. **HP-I**, EDS01 module 2 | STS01 module 2
6. Prepare and apply body filler. **HP-I**, EDS01 module 3 | STS01 module 2
7. Identify different types of body fillers. **HP-G**, EDS01 module 3 | STS01 module 3
8. Rough sand body filler to contour; finish sand. **HP-I**, EDS01 module 3 | STS01 module 2
9. Determine the proper metal finishing techniques for aluminum. **HP-G**, DAM05 module 2 | STA01 modules 2, 3

**10.** Determine proper application of body filler to aluminum. **HP-G**, PRA01 modules 3, 5 | STA01 module 2

#### **Unit D. Movable Glass and Hardware**

**1.** Inspect, adjust, repair or replace window regulators, run channels, glass power mechanisms, and related controls. **HP-I**, DAM04 module 2 | GLA01 module 2 | PWR01 module 5

**2.** Inspect, adjust, repair, remove, reinstall or replace weather-stripping. **HP-G**, 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**, DAM04 module 2 | GLA01 module 4 | PWR01 module 5

**4.** Inspect, remove, reinstall, and align convertible top and related mechanisms. **HP-G**, DAM02 v2.1 module 3 | DAM02 v2.2 module 2 | EXT01 module 2

**5.** Initialize electrical components as needed. **HP-G**, GLA01 Module 1, 4 | PWR01 module 6

#### **Unit E. Metal Welding and Cutting**

**1.** Identify weldable and non-weldable substrates used in vehicle construction. **HP-I**, EXT02 module 1 | FCR01 module 1 | SPS07 modules 1, 2 | ITM01e | ITM02e

**2.** Weld and cut high-strength steel and other steels. **HP-I**, EXT02 module 1 | WCS01 v1.2 modules 1, 2, 3, 4 | WCS01 v1.3 1, 2, 3, 4, 5

**3.** Weld and cut aluminum. WCA01 modules 1, 2

**4.** Determine the correct GMAW (MIG) welder type, electrode/wire type, diameter, and gas to be used in a specific welding situation. **HP-I**, EXT02 module 2 WCS01 module 1

**5.** Set up and adjust the GMAW (MIG) welder to “tune” for proper electrode stickout, voltage, polarity, flow rate, and wire-feed speed required for the substrate being welded. **HP-I**, WCS01 module 1

**6.** Store, handle, and install high-pressure gas cylinders. **HP-I**, WCS01 module 1

**7.** Determine work clamp (ground) location and attach. **HP-I**, WCS01 v1.2 module 1

**8.** Use the proper angle of the gun to the joint and direction of gun travel for the type of weld being made in the flat, horizontal, vertical, and overhead positions. **HP-I**, WCS01 v1.2 module 1 | WCS01 v1.3 modules 1, 2, 3, 4, 5

**9.** Protect adjacent panels, glass, vehicle interior, etc. from welding and cutting operations. **HP-I**, EXT02 modules 1, 2, 3, 4, 5 | WCS01 v1.2 module 1 | WCS01 module 1

- 10.** Protect computers and other electronic control modules during welding procedures. **HP-I**, WCS01 module 1
- 11.** 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**, WCS01 v1.2 module 1
- 12.** Determine the joint type (butt weld with backing, lap, etc.) for weld being made. **HP-I**, EXT02 modules 1, 2, 3, 4, 5
- 13.** Determine the type of weld (continuous, stitch weld, plug, etc.) for each specific welding operation. **HP-I**, EXT02 modules 1, 2, 3, 4, 5
- 14.** Perform the following welds: continuous, plug, butt weld with and without backing, fillet, etc. **HP-I**, WCS01 v1.2 modules 2, 3, 4
- 15.** Perform visual and destructive tests on each weld type. **HP-I**, WCS01 v1.2 modules 2, 3, 4
- 16.** Identify the causes of various welding defects; make necessary adjustments **HP-I**, WCS01 v1.2 module 1
- 17.** Identify cause of contact tip burn-back and failure of wire to feed; make necessary adjustments. **HP-I**, WCS01 module 1
- 18.** Identify cutting process for different substrates and locations; perform cutting operation. **HP-I**, SPS07 modules 1, 2 | WCS05 module 4
- 19.** Identify different methods of attaching non-structural components (squeeze type resistant spot welds (STRSW), riveting, non-structural adhesive, silicon bronze, etc.). **HP-G**, FCR01 module 1 | EXT02 module 1

## **Unit F. Plastic and Adhesives**

- 1.** Identify the types of plastics; determine repairability. **HP-I**, 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**, PLA01 modules 1, 2 | PLA02 modules 1, 2 | PLA03 mod 1
- 3.** Repair rigid, semi-rigid, or flexible plastic panels. **HP-I**, PLA01 module 2 | PLA02 modules 2, 3 | PLA03 modules 2, 3
- 4.** Remove or repair damaged areas from rigid exterior composite panels. **HP-G**, EXT02 module 2 | PLA02 module 3 | PLA03 module 3
- 5.** Replace bonded rigid exterior composite body panels; straighten or align panel supports. **HP-G**, EXT02 module 2 | PLA03 modules 3, 4



## **H. PAINTING AND REFINISHING (B2)**

**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.

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

### **Unit A. Safety Precautions**

1. Identify and take necessary precautions with hazardous operations and materials according to federal, state, and local regulations. **HP-I**, EDS02 module 1 | REF01 module 4 | REF03 modules 2, 4 | WKR01 module
2. Identify safety and personal health hazards according to OSHA guidelines and the “Right to Know Law”. **HP-I**, WKR01 module 1
3. Inspect spray environment and equipment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards. **HP-I**, EDS02 module 1 | REF01 module 3 | WKR01 module 2
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**, WKR01 module 4
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**, 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**, EDS02 modules 1, 2, 3, 4, 5, 6, 7 | REF02 module 2 | REF03 modules 2, 4 | WKR01 module 4

### **Unit B. Surface Preparation Class Hrs. Lab Hrs. Total Hrs.**

1. Inspect, remove, store, and replace exterior trim and components necessary for proper surface preparation. **HP-I**, DAM04 v.2.1 module 4 | DAM04 v.2.2 module 3 | TRM01 modules 3, 6, 7
2. Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants. **HP-I**, 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**, DAM01 v.2.4 module 3 | DAM01 v.2.5 module 4 | EDS02 module 3 | REF02 module 1
4. Strip paint to bare substrate (paint removal). **HP-I**, EDS02 module 3 | REF02 module 2
5. Dry or wet sand areas to be refinished. **HP-I**, EDS02 module 3 | REF02 module 4 | REF03 module 2
6. Featheredge areas to be refinished. **HP-I**, EDS02 module 3 | REF02 module 4
7. Apply suitable metal treatment or primer in accordance with total product systems. **HP-I**, CPS01 module 3 | EDS02 module 4 | REF02 module 4
8. Mask and protect other areas that will not be refinished. **HP-I**, EDS02 module 3 | REF02 module 2
9. Mix primer, primer-surfacer or primer-sealer. **HP-I**, EDS02 module 4 | REF01 module 5 | REF02 module 4 | REF03 module 4
10. Identify a complimentary color or shade of undercoat to improve coverage. **HP-G**, REF03 Module 2
11. Apply primer onto surface of repaired area. **HP-I**, EDS02 module 4 | REF02 module 4
12. Apply two-component finishing filler to minor surface imperfections. **HP-I**, EDS01 module 3 | STS01 module 2
13. Block sand area to which primer-surfacer has been applied. **HP-I**, EDS02 module 4 | REF02 module 4
14. Dry sand area to which finishing filler has been applied. **HP-I**, EDS01 module 3 | STS01 module 2
15. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. **HP-I**, EDS02 module 3 | REF02 module 4 | REF03 modules 3, 4
16. Clean area to be refinished using a final cleaning solution. **HP-I**, EDS02 module 3 | REF03 module 3
17. 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
18. Apply suitable sealer to the area being refinished. **HP-I**, EDS02 module 4 | REF03 module 4
19. Scuff sand to remove nibs or imperfections from a sealer. **HP-I**, EDS02 module 4
20. Apply stone chip resistant coating. **HP-G**, CPS01 module 4 | EDS02 module 5 | REF03 module 3

**21.** Restore caulking and seam sealers to repaired areas. **HP-G**, CPS01 modules 3, 4 | EDS02 modules 4, 5 | REF02 module 5

**22.** Prepare adjacent panels for blending. **HP-I**, EDS02 module 5 | REF02 modules 4, 5

**23.** 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 module 4

**24.** Identify metal parts to be refinished; determine the materials needed, preparation, and refinishing procedures. **HP-I**, EDS02 module 4 | REF02 modules

### **Unit C. Spray Gun and Related Equipment Operation**

**1.** Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, and spray environment). **HP-I**, EDS02 module 2 | REF01 module 1

**2.** Select spray gun setup (fluid needle, nozzle, and cap) for product being applied. **HP-I**, EDS02 module 2 | REF01 module 1 | REF02 module 3

**3.** Test and adjust spray gun using fluid, air and pattern control valves. **HP-I**, EDS02 module 2 | REF01 module 1 | REF02 module 3

**4.** Demonstrate an understanding of the operation of pressure spray equipment. **HP-G**, EDS02 module 2 | REF01 module 1

### **Unit D. Paint Mixing, Matching, and Applying**

**1.** Identify color code by manufacturer's vehicle information label. **HP-I**, DAM01 module 4 | EDS02 module 3 | REF03 module 1

**2.** Shake, stir, reduce, catalyze/activate, and strain refinish materials. **HP-I**, CPS01 modules 3, 4 | EDS02 modules 4, 5 | REF02 module 5

**3.** Apply finish using appropriate spray techniques (gun arc, angle, distance, travel speed, and spray pattern overlap) for the finish being applied. **HP-I**, EDS02 module 2 | REF02 module 3

**4.** Apply selected product on test or let-down panel; check for color match. **HP-I**, REF03 module 2

**5.** Apply single stage topcoat. **HP-G**, EDS02 module 5 | REF03 module 4

**6.** Apply basecoat/clearcoat for panel blending and panel refinishing. **HP-I**, EDS02 module 5 | REF03 modules 3, 4

**7.** Apply basecoat/clearcoat for overall refinishing. **HP-G**, EDS02 module 5 | REF03 module 4

**8.** Remove nibs or imperfections from basecoat. **HP-I**, REF04 module 2

9. Refinish rigid or semi-rigid plastic parts. **HP-G**, EDS02 module 5 | REF03 modules 3, 4
10. Refinish flexible plastic parts. **HP-I**, EDS02 module 5 | REF03 modules 3, 4
11. Apply multi-stage coats for panel blending and overall refinishing. **HP-G**, EDS02 module 5 | REF03 module 4
12. Identify and mix paint using a formula. **HP-I**, EDS02 module 4 | REF01 module 5
13. Identify poor hiding colors; determine necessary action. **HP-G**, EDS02 module 6 | REF03 module 3
14. Tint color using formula to achieve a blendable match. **HP-I**, EDS02 module 4 | REF03 module 5
15. Identify alternative color formula to achieve a blendable match. **HP-I**, EDS02 module 5 | REF03 module 2
16. Identify the materials equipment, and preparation differences between solvent and waterborne technologies. **HP-G**, REF07

#### **Unit E. Paint Defects-Causes and Cures**

1. Identify blistering (raising of the paint surface, air entrapment); determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3
2. Identify a dry spray appearance in the paint surface; determine the cause(s) and correct the condition. **HP-I**, EDS02 module 6 | REF03 module 3
3. Identify the presence of fish-eyes (crater-like openings) in the finish; determine the cause(s) and correct the condition. **HP-I**, EDS02 module 6 | REF03 module 3
4. Identify lifting; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3
5. Identify clouding (mottling and streaking in metallic finishes); determine the cause(s) and correct the condition. **HP-I**, EDS02 module 6
6. Identify orange peel; determine the cause(s) and correct the condition. **HP-I**, EDS02 module 6 | REF03 module 3 | REF04 module 2
7. Identify overspray; determine the cause(s) and correct the condition. **HP-I**, 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; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3
9. Identify sags and runs in paint surface; determine the cause(s) and correct the condition. **HP-I**, EDS02 module 6 REF03 module 3 REF04 module 2

10. Identify sanding marks or sandscratch swelling; determine the cause(s) and correct the condition. **HP-I**, 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 while finish is drying; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF02 module 1
12. Identify color difference (off-shade); determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 1
13. Identify tape tracking; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3
14. Identify low gloss condition; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3 | REF04 module 2
15. Identify poor adhesion; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3
16. Identify paint cracking (shrinking, splitting, crowsfeet or line-checking, microchecking, etc.); determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6
17. Identify corrosion; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF02 module 3 | REF03 module 3
18. Identify dirt or dust in the paint surface; determine the cause(s) and correct the condition. **HP-I**, 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; determine the cause(s) and correct the condition. **HP-G**, REF04 module 2
20. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition. **HP-G**, 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**, 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); determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3
23. Identify chalking (oxidation); determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6
24. Identify bleed-through (staining); determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6

25. Identify pin-holing; determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6
26. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. **HP-I**, REF04 module 2
27. Identify pigment flotation (color change through film build); determine the cause(s) and correct the condition. **HP-G**, EDS02 module 6 | REF03 module 3

#### **Unit F. Final Detail**

1. Apply decals, transfers, tapes, woodgrains, pinstripes (painted and taped), etc. **HP-G**, TRM01 module 4
2. Sand, buff and polish fresh or existing finish to remove defects as required. **HP-I**, REF04 module 2
3. Clean interior, exterior, and glass. **HP-I**, REF04 module 3
4. Clean body openings (door jambs and edges, etc.). **HP-I**, REF04 module 3
5. Remove overspray. **HP-I**, EDS02 module 6 | REF04 module 2
6. Perform vehicle clean-up; complete quality control using a checklist. **HP-I**, REF04 module 3

### **I. DEMONSTRATING EMPLOYABILITY SKILLS**

**In compliance with the portrait of a South Carolina Graduate, the following tasks will be addressed.**

In preparation for employment, along with job shadowing opportunities, students will use the SP2 curriculum to advance individual soft skill practices.

#### **Land That Job: Interview Skills for Automotive Students**

##### **Unit A. Job Preparation**

1. Complete a resume.
2. Complete a job application.
3. Create a portfolio.
4. Demonstrate interviewing skills.
5. Demonstrate workplace/soft skills.

[Course Academic Standards and Indicators](#)

[Course Materials/Resources](#)