Auto Body Technology II

8677 36 weeks / 280 hours

Table of Contents

Acknowledgments ......................................................................................................................................... 1
Course Description ........................................................................................................................................ 2
Task Essentials Table .................................................................................................................................... 3
Curriculum Framework ................................................................................................................................. 7
Practicing Safety ........................................................................................................................................... 7
Preparing the Surface ................................................................................................................................. 14
Operating Spray Gun and Related Equipment ............................................................................................ 28
Mixing, Matching, and Applying Paint ...................................................................................................... 31
Identifying Paint Defects--Causes and Cures ............................................................................................. 41
Applying Final Detailing ............................................................................................................................ 45
Preparing for a Career in Auto Body Repair ............................................................................................... 49
SOL Correlation by Task ............................................................................................................................ 51
Teacher Resources ...................................................................................................................................... 54
Transportation Career Modules .................................................................................................................. 55
Entrepreneurship Infusion Units ................................................................................................................ 55
Appendix: Credentials, Course Sequences, and Career Cluster Information ............................................. 56

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1
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Office of Career, Technical, and Adult Education
Virginia Department of Education

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Course Description

Suggested Grade Level: 11 or 12
Prerequisites: 8676

In the global automobile collision repair industry, there is a growing demand for qualified auto body technicians. In this course, students explore painting and refinishing techniques that include surface preparation, spray gun and related equipment operation, paint mixing, matching, and applying, and final vehicle detailing. Students who successfully complete this program sequence may be eligible to take the Automotive Service Excellence (ASE) Student Certification examinations. Auto Body Technology II is closely aligned with the 2016 ASE Education Foundation collision repair and refinish program standards.

Note: Legislation enacted in the 2011 Virginia General Assembly (HB 1493) and amended in 2012 (HB 1108) requires where there is a national industry certification for career and technical education instructional personnel or programs for automotive technology, the Board of Education must make such certification mandatory. The provisions of this act shall become
effective July 1, 2013. To comply with the requirements, all auto body technology programs must be ASE Education Foundation accredited and the instructors must be certified by the National Institute for ASE.

As noted in Superintendent's Memo #058-17 (2-28-2017), this Career and Technical Education (CTE) course must maintain a maximum pupil-to-teacher ratio of 20 students to one teacher, due to safety regulations. The 2016-2018 biennial budget waiver of the teacher-to-pupil ratio staffing requirement does not apply.

Task Essentials Table

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (○) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

<table>
<thead>
<tr>
<th>Task Number</th>
<th>8677</th>
<th>Tasks/Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practicing Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>⊕</td>
<td>Select and use personal protective equipment (PPE); take necessary precautions with hazardous operations, and materials according to federal, state, and local regulations.</td>
</tr>
<tr>
<td>40</td>
<td>⊕</td>
<td>Identify safety and personal health hazards according to Occupational Safety and Health Administration (OSHA) guidelines and the right to know law.</td>
</tr>
<tr>
<td>41</td>
<td>⊕</td>
<td>Inspect the spray environment and equipment to ensure compliance with federal, state, and local regulations, and for safety and cleanliness hazards.</td>
</tr>
<tr>
<td>42</td>
<td>⊕</td>
<td>Select and use a NIOSH-approved purifying respirator. Inspect its condition, and ensure the fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulations.</td>
</tr>
<tr>
<td>43</td>
<td>⊕</td>
<td>Select and use a NIOSH-approved supplied air (e.g., Make-up Air, Fresh Air Systems) respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation.</td>
</tr>
<tr>
<td>44</td>
<td>⊕</td>
<td>Select and use PPE for surface preparation, spray gun and related equipment operation, paint mixing, matching and application, paint defects, and detailing (i.e., gloves, suits, hoods, eye and ear protection, etc.).</td>
</tr>
<tr>
<td>Task Number</td>
<td>8677</td>
<td>Tasks/Competencies</td>
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<tr>
<td>-------------</td>
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</tr>
<tr>
<td><strong>Preparing the Surface</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>+</td>
<td>Inspect, remove, store, protect, and replace exterior trim and components necessary for proper surface preparation.</td>
</tr>
<tr>
<td>46</td>
<td>+</td>
<td>Soap and water-wash an entire vehicle; use the appropriate cleaner to remove contaminants.</td>
</tr>
<tr>
<td>47</td>
<td>+</td>
<td>Inspect and identify the type of finish, surface condition, and film thickness; develop and document a plan for refinishing, using a total product system.</td>
</tr>
<tr>
<td>48</td>
<td>+</td>
<td>Remove paint finish.</td>
</tr>
<tr>
<td>49</td>
<td>+</td>
<td>Dry- or wet-sand areas to be refinished.</td>
</tr>
<tr>
<td>50</td>
<td>+</td>
<td>Featheredge broken areas to be refinished.</td>
</tr>
<tr>
<td>51</td>
<td>+</td>
<td>Apply suitable metal treatment or primer in accordance with total product systems.</td>
</tr>
<tr>
<td>52</td>
<td>+</td>
<td>Mask and protect other areas that will not be refinshed.</td>
</tr>
<tr>
<td>53</td>
<td>+</td>
<td>Demonstrate different masking techniques (e.g., recess or back masking, foam door type).</td>
</tr>
<tr>
<td>54</td>
<td>+</td>
<td>Mix primer, primer-surfacer, and primer-sealer.</td>
</tr>
<tr>
<td>55</td>
<td>+</td>
<td>Identify a complimentary color or shade of undercoat to improve coverage.</td>
</tr>
<tr>
<td>56</td>
<td>+</td>
<td>Apply primer onto the surface of repaired area.</td>
</tr>
<tr>
<td>57</td>
<td>+</td>
<td>Apply two-component finishing filler to minor surface imperfections.</td>
</tr>
<tr>
<td>58</td>
<td>+</td>
<td>Block-sand the area to which primer-surfacer has been applied.</td>
</tr>
<tr>
<td>59</td>
<td>+</td>
<td>Dry-sand the area to which two-component finishing filler has been applied.</td>
</tr>
<tr>
<td>60</td>
<td>+</td>
<td>Remove dust from the area to be refinished, including cracks or moldings of adjacent areas.</td>
</tr>
<tr>
<td>Task Number</td>
<td>8677</td>
<td>Tasks/Competencies</td>
</tr>
<tr>
<td>-------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>61</td>
<td>Clean the area to be refinished, using a final cleaning solution.</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Remove, with a tack rag, any dust or lint particles from the area to be refinished.</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Apply suitable primer sealer to the area being refinished.</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Scuff-sand to remove nibs or imperfections from a sealer.</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Apply stone chip-resistant coating.</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Restore caulking and seam sealers to repaired areas.</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Prepare adjacent panels for blending.</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished; determine the materials needed, preparation, and refinishing procedures.</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Identify metal parts to be refinished; determine the materials needed, preparation, and refinishing procedures.</td>
<td></td>
</tr>
</tbody>
</table>

**Operating Spray Gun and Related Equipment**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>70</th>
<th>Inspect, clean, and determine the condition of spray guns and related equipment (e.g., air hoses, regulators, air lines, air source, spray environment).</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>Select the spray gun setup (e.g., fluid needle, nozzle, cap) for product being applied.</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>Test and adjust a spray gun using fluid, air, and pattern control valves.</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Demonstrate an understanding of the operation of pressure spray equipment.</td>
<td></td>
</tr>
</tbody>
</table>

**Mixing, Matching, and Applying Paint**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>74</th>
<th>Identify the color code by the manufacturer’s vehicle information label.</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>Shake, stir, reduce, catalyze or activate, and strain refinish materials.</td>
<td></td>
</tr>
<tr>
<td>Task Number</td>
<td>8677</td>
<td>Tasks/Competencies</td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
<td>--------------------</td>
</tr>
<tr>
<td>76</td>
<td>+</td>
<td>Apply finish using appropriate spray techniques (e.g., gun arc, angle, distance, travel speed, spray pattern overlap) for the finish being applied.</td>
</tr>
<tr>
<td>77</td>
<td>+</td>
<td>Apply a selected product on a test or let-down panel; check for color match.</td>
</tr>
<tr>
<td>78</td>
<td>+</td>
<td>Apply a single-stage topcoat.</td>
</tr>
<tr>
<td>79</td>
<td>+</td>
<td>Apply a basecoat or clearcoat for panel blending and panel refinishing.</td>
</tr>
<tr>
<td>80</td>
<td>+</td>
<td>Apply a basecoat or clearcoat for overall refinishing.</td>
</tr>
<tr>
<td>81</td>
<td>+</td>
<td>Remove nibs or imperfections from the basecoat.</td>
</tr>
<tr>
<td>82</td>
<td>+</td>
<td>Identify product expiration dates as applicable.</td>
</tr>
<tr>
<td>83</td>
<td>+</td>
<td>Refinish plastic parts.</td>
</tr>
<tr>
<td>84</td>
<td>+</td>
<td>Apply multi-stage (e.g., tri-coat) coats for blending or overall refinishing.</td>
</tr>
<tr>
<td>85</td>
<td>+</td>
<td>Identify and mix paint using a formula.</td>
</tr>
<tr>
<td>86</td>
<td>+</td>
<td>Identify poor hiding colors; determine the necessary action.</td>
</tr>
<tr>
<td>87</td>
<td>+</td>
<td>Tint the color, using a formula, to achieve a blendable match.</td>
</tr>
<tr>
<td>88</td>
<td>+</td>
<td>Identify an alternative color formula to achieve a blendable match.</td>
</tr>
<tr>
<td>89</td>
<td>+</td>
<td>Identify the materials equipment and preparation differences between solvent and waterborne technologies.</td>
</tr>
</tbody>
</table>

**Identifying Paint Defects--Causes and Cures**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>8677</th>
<th>Tasks/Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>+</td>
<td>Identify paint defects and their causes.</td>
</tr>
<tr>
<td>91</td>
<td>+</td>
<td>Identify paint-defect cures and corrections.</td>
</tr>
<tr>
<td>92</td>
<td>+</td>
<td>Correct pinholing.</td>
</tr>
<tr>
<td>93</td>
<td>+</td>
<td>Correct buffing-related imperfections (i.e., swirl marks and wheel burns).</td>
</tr>
<tr>
<td>Task Number</td>
<td>8677</td>
<td>Tasks/Competencies</td>
</tr>
<tr>
<td>-------------</td>
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<td>--------------------</td>
</tr>
<tr>
<td>94</td>
<td></td>
<td>Identify pigment flotation (color change through film build); correct the cause(s) and the condition.</td>
</tr>
</tbody>
</table>

**Applying Final Detailing**

| 95          |      | Apply decals, transfers, tapes, woodgrains, pinstripes (i.e., painted and taped), etc. |
| 96          |      | Sand, buff, and polish the fresh or existing finish to remove defects as required. |
| 97          |      | Clean the interior, exterior, and glass. |
| 98          |      | Clean body openings (i.e., doorjambs and edges, etc.). |
| 99          |      | Remove overspray. |
| 100         |      | Perform vehicle clean-up; complete quality control using a checklist. |

**Preparing for a Career in Auto Body Repair**

| 101         |      | Research opportunities in the auto body repair field. |
| 102         |      | Prepare/update portfolio of current skills. |
| 103         |      | Identify additional ASE (Automotive Service Excellence) and other industry-recognized areas of certification. |
| 104         |      | Create a written estimate of repairs. |

Legend: ☑ Essential ☐ Non-essential ☐ Omitted

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**Curriculum Framework**

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**Practicing Safety**
Task Number 39

Select and use personal protective equipment (PPE); take necessary precautions with hazardous operations, and materials according to federal, state, and local regulations.

Definition

Procedures should include the following:

- Identifying government agencies regulating the auto body repair industry.
- Practicing general safety rules.
- Using PPE.
- Demonstrating fire emergency procedures, including proper use of fire protection equipment.
- Using chemicals safely.
- Identifying environmental effects of chemicals.
- Using proper chemical disposal techniques.
- Explaining and discussing information on safety data sheets (SDS).
- Identifying toxic substances and considerations in handling them.
- Using electrical safety procedures (including those related to the air bag and battery).
- Identifying safe under-hood practices.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
A. Restraint Systems
Task 1

Process/Skill Questions

- How could mishandling hazardous materials affect safety?
- What effect can hazardous materials have on the environment?
- Why are proper disposal procedures important to an auto body shop owner?

Common Career Technical Core

TD4
Identify governmental policies and procedures for transportation, distribution and logistics facilities.
TD5
Describe transportation, distribution and logistics employee rights and responsibilities and employers’ obligations concerning occupational safety and health.

Task Number 40

Identify safety and personal health hazards according to Occupational Safety and Health Administration (OSHA) guidelines and the right to know law.

Definition

Identification should include the different types of solvents, soaps, cleaning solutions, oils, greases, specialty additives, gases, and dusts encountered in the auto body field, along with the hazards and precautions associated with each, in accordance with manufacturer's instructions, government regulations, and instructor’s guidelines. Safety measures should include

- identifying working conditions and safety precautions in the auto body repair lab during vehicle repair
- identifying safety precautions related to the use of the National Institute for Occupational Safety and Health (NIOSH)-approved personal sanding respirator
- describing the correct PPE for painting or refinishing and sanding (i.e., gloves, suits, hoods, eye and ear protection)
- identifying the different types of fires encountered in the auto body field (i.e., classes A, B, C, and D), along with the hazards, precautions, and appropriate type of extinguisher associated with each
- identifying environmental effects of chemicals associated with the auto body field
- identifying the Environmental Protection Agency (EPA) and OSHA regulations and penalties associated with the use and misuse of chemicals.

Identification of proper chemical disposal techniques as documented by EPA, OSHA, and local government regulations, and instructor’s guidelines should include

- information on the SDS for all nine product identification areas
- toxic materials used during typical vehicle repair operations
- hazardous waste that might be generated during typical vehicle repair operations
- right-to-know laws and EPA regulations for handling toxic substances, as well as the importance of compliance with them.

Identification of potential electrical hazards during vehicle repair should include

- precautions to be taken during disabling of airbags, computerized features, and other electrical components
• the basic types of under-hood safety practices required in the auto body field, along with the correct method of operation, the hazards (e.g., moving parts; thermal, chemical, and electrical), and the precautions associated with each, in accordance with instructor’s guidelines.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
A. Restraint Systems
Task 2

Process/Skill Questions

• Whom does OSHA protect?
• What is the importance of the right-to-know laws for the auto body field?
• How are OSHA guidelines enforced?

Common Career Technical Core

TD4
Identify governmental policies and procedures for transportation, distribution and logistics facilities.

TD5
Describe transportation, distribution and logistics employee rights and responsibilities and employers’ obligations concerning occupational safety and health.

Task Number 41

Inspect the spray environment and equipment to ensure compliance with federal, state, and local regulations, and for safety and cleanliness hazards.

Definition

Inspection should include ensuring compliance with federal, state, and local regulations and determining safety and cleanliness hazards.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
A. Restraint Systems
Task 3
Process/Skill Questions

- What are the inspection guidelines?
- Where are the guidelines located within the shop?
- Why might local regulations differ from federal regulations?

Common Career Technical Core

**TD4**
Identify governmental policies and procedures for transportation, distribution and logistics facilities.

**TD5**
Describe transportation, distribution and logistics employee rights and responsibilities and employers’ obligations concerning occupational safety and health.

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**Task Number 42**

**Select and use a NIOSH-approved purifying respirator. Inspect its condition, and ensure the fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulations.**

**Definition**

Procedures should include

- inspecting the condition of the respirator
- ensuring its fit and operation
- performing proper maintenance in accordance with OSHA regulations and applicable state and local regulations.

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ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
A. Restraint Systems
Task 4

**Process/Skill Questions**

- What is NIOSH?
• What are the OSHA requirements for the correct use of the NIOSH-approved personal sanding respirator?
• What are the steps to use for a proper test?

Common Career Technical Core

TD4
Identify governmental policies and procedures for transportation, distribution and logistics facilities.

TD5
Describe transportation, distribution and logistics employee rights and responsibilities and employers’ obligations concerning occupational safety and health.

Task Number 43

Select and use a NIOSH-approved supplied air (e.g., Make-up Air, Fresh Air Systems) respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation.

Definition

Procedures should include the use and proper maintenance in accordance with OSHA regulations and applicable state and local regulations.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
A. Restraint Systems
Task 5

Process/Skill Questions

• What are the advantages of a fresh air ventilation system?
• What are some indications that a ventilation system is in disrepair or is malfunctioning?
• Why would one ventilation system be chosen over other types of systems?

Common Career Technical Core

TD4
Identify governmental policies and procedures for transportation, distribution and logistics facilities.
Describe transportation, distribution and logistics employee rights and responsibilities and employers’ obligations concerning occupational safety and health.

Task Number 44

Select and use PPE for surface preparation, spray gun and related equipment operation, paint mixing, matching and application, paint defects, and detailing (i.e., gloves, suits, hoods, eye and ear protection, etc.).

Definition

Use of PPE (i.e., gloves, suits, hoods, eye and ear protection) should be identified for different tasks, including

- preparing a surface
- operating a spray gun and related equipment
- mixing, matching, and applying paint
- repairing paint defects
- detailing.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
A. Restraint Systems
Task 6

Process/Skill Questions

- How do toxic chemicals enter the body?
- Why does the painting and refinishing environment have specific clothing requirements?
- What tools are the noisiest, and how is hearing loss prevented?

Common Career Technical Core

TD5
Describe transportation, distribution and logistics employee rights and responsibilities and employers’ obligations concerning occupational safety and health.
Preparing the Surface

Task Number 45

Inspect, remove, store, protect, and replace exterior trim and components necessary for proper surface preparation.

Definition

Procedures should include

- removing, storing, and replacing exterior trim and moldings
- locating and drilling holes for molding and trim.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 1

Process/Skill Questions

- Why is it important to remove trim safely?
- Why should exterior trim be inspected before and after removal?
- What are the components of exterior trim?

Task Number 46

Soap and water-wash an entire vehicle; use the appropriate cleaner to remove contaminants.

Definition

Procedures should include washing an entire vehicle to remove dirt, grease, wax, or protective coatings from the area to be refinished and adjacent vehicle surfaces. Steps include

- applying silicone-free soap and water wash
• applying volatile organic compounds (VOC)-compliant solvent cleaner according to manufacturer's specifications for vehicle finish
• wiping the surface area with clean cloths or towels.

Task Number 47

Inspect and identify the type of finish, surface condition, and film thickness; develop and document a plan for refinishing, using a total product system.

Definition

Procedures should include

• thoroughly inspecting the surface to determine the condition and type of finish
• checking for film thickness
• developing a plan for refinishing, using a total product system.
Task Number 48

Remove paint finish.

Definition

Removal should include determining the condition of the paint surface and removing only those areas in poor condition due to pits, rust, poor adhesion, and flaking. Methods for removal include

- power sanding (often preferred on small areas of removal)
- media blasting
- chemical removal.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 4

Process/Skill Questions

- Why is it important to remove paint finish according to specifications?
- What methods might be used for paint finish removal?
- What basic safety precautions should a technician take when removing paint?

Task Number 49

Dry- or wet-sand areas to be refinished.

Definition

Procedures should include dry- or wet-sanding areas to be refinished, using the appropriate grit according to paint manufacturer's specifications.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 5
Process/Skill Questions

- What are the advantages of dry-sanding?
- Where can recommendations for sanding procedures be found?
- What are the advantages of wet-sanding?

Task Number 50

Featheredge broken areas to be refinished.

Definition

Featheredging should include

- starting and finishing with appropriate grits
- feathering by hand and/or using power equipment.

Task Number 51

Apply suitable metal treatment or primer in accordance with total product systems.

Definition

Application of metal treatment or primer can use two-component or low-VOC primers. The procedure should include
• cleaning the surface
• applying metal conditioner
• applying a conversion coat.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 7

Process/Skill Questions

• What would manufacturers recommend to be the best metal treatment for substrates?
• What are the three metals generally affected by treatment?
• How do the treatment procedures differ for the three types of metal?

Task Number 52

Mask and protect other areas that will not be refinished.

Definition

Procedures should include masking trim and protecting other areas (e.g., moldings, glass, tires) that will not be refinished, attending to the following considerations:

• Determine whether to remove or mask trim.
• Allow space for paint buildup.
• Select type and width of masking tape or paper.
• Use pressure-sensitive tapes when working on fresh paint or sharp edges.
• Use high-quality masking paper for two-tone painting (to avoid bleed-through).
• Apply tape by stretching and pleating it in sharp curves.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 8

Process/Skill Questions

• Why is masking important?
• What are masking methods?
• What masking materials are available?
- When is paper used in masking?

### Task Number 53

**Demonstrate different masking techniques (e.g., recess or back masking, foam door type).**

**Definition**

Demonstration should include the application of such products.

ASE Education Foundation  
2016 Collision Master Task List  
IV. Painting and Refinishing  
B. Surface Preparation  
Task 9

**Process/Skill Questions**

- How does one determine what type and size foam should be used?  
- How does one determine what technique should be used?

### Task Number 54

**Mix primer, primer-surfacer, and primer-sealer.**

**Definition**

Mixing of undercoats should include the following steps:

- Identify types of all preparation coats.  
- Select preparation coat based on substrate.  
- Determine ratios and proportions based on manufacturer's specifications.

ASE Education Foundation  
2016 Collision Master Task List  
IV. Painting and Refinishing  
B. Surface Preparation  
Task 10
Process/Skill Questions

- What are the differences between primer-surfacer and primer-sealer?
- Why is primer used?
- What are the main differences between primer-surfacer and primer-sealer?
- What safety precautions should be followed?
- Why is it important to apply primer per manufacturer's guidelines?

Task Number 55

Identify a complimentary color or shade of undercoat to improve coverage.

Definition

Identification should include using the paint manufacturer’s recommendations.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 11

Process/Skill Questions

- How does one determine the undercoating color?
- How does the shading primer improve coverage?
- What is the importance of a letdown panel?

Task Number 56

Apply primer onto the surface of repaired area.

Definition

Application of the undercoat should include

- demonstration of spray gun setup, adjustment, and spray techniques
- adjustment of the technique per environmental variables for optimal results.
ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 12

Process/Skill Questions

• Why should the repaired area be primed?
• What kind of primer should be used on the repaired area?
• How many coats should be applied?

Task Number 57

Apply two-component finishing filler to minor surface imperfections.

Definition

Application of two-component finishing filler should include

• determining when finishing filler should be used
• mixing and applying filler according to manufacturer’s specifications.

Task Number 58

Process/Skill Questions

• What is the difference between body filler and two-component filler?
• When is the imperfection too great to use polyester finishing putty?
• How can finishing fillers save time?
• What are the advantages of using finishing fillers?
Block-sand the area to which primer-surfacer has been applied.

Definition

Procedures should include

- sanding until all defects are removed or the need for additional coats of finishing filler is determined
- following manufacturer’s specifications.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 14

Process/Skill Questions

- What are the advantages of sanding? What are the advantages of wet-sanding?
- What are some situations that would not require sanding?
- What are recommended sanding procedures?
- What are the various drying times before sanding can begin?

Task Number 59

Dry-sand the area to which two-component finishing filler has been applied.

Definition

Procedures should include

- sanding until all defects are removed or the need for additional coats of finishing filler is determined
- following manufacturer’s specifications.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 15

Process/Skill Questions

- What grit sandpaper is recommended for sanding two-component filler?
- What surface preparations must be completed before sanding?
- What type of primer can be applied after final sanding?

Task Number 60

Remove dust from the area to be refinished, including cracks or moldings of adjacent areas.

Definition

Procedures include removing dust or lint particles from the area with a tack rag.

Task Number 61

Clean the area to be refinished, using a final cleaning solution.

Definition

Cleaning the area to be refinished should include
• determining the substrate
• choosing the final cleaning solution based on the substrate
• following proper safety procedures involved with handling chemicals
• cleaning the area according to paint manufacturer’s standards.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 17

Process/Skill Questions

• Why is gasoline an inappropriate solution with which to clean a car?
• What are common paint manufacturer's recommendations for final cleaning?
• What are the safety issues involved in cleaning the area to be refinished?

Task Number 62

Remove, with a tack rag, any dust or lint particles from the area to be refinished.

Definition

Procedure should include identifying the proper tack rag to use.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 18

Process/Skill Questions

• Why is complete dust removal important?
• What problems can dust cause?
• What are the correct dust removal methods?

Task Number 63
Apply suitable primer sealer to the area being refinished.

Definition

Application should include masking areas not receiving the coating and applying coating to the lower panels of the vehicle and the front edge of the fender, according to manufacturer's specifications.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 19

Process/Skill Questions

- What is stone coating?
- Can stone coating be top-coated? Why?
- When is stone coating available in multiple colorations?
- Where would stone coating be applied?

Task Number 64

Scuff-sand to remove nibs or imperfections from a sealer.

Definition

Scuff-sanding should include

- determining the substrate
- examining the substrate to decide which abrasive material to use.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 20

Process/Skill Questions

- What are nibs?
- What is scuff sanding?
• What are some abrasive materials that could be used for nib removal?

Task Number 65

Apply stone chip-resistant coating.

Definition

Application should include using proper equipment and following manufacture’s specifications and guidelines.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 21

Process/Skill Questions

• What is the purpose of stone-chip-resistant material?
• How does one apply stone-resistant material?

Task Number 66

Restore caulking and seam sealers to repaired areas.

Definition

Restoration should include following manufacture’s specifications and guidelines.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 22

Process/Skill Questions

• How does one determine when to use a 1K vs. a 2K?
• What is the proper preparation for the area to be primed?
Task Number 67

Prepare adjacent panels for blending.

Definition

Preparation should include blending so that slight differences in color or texture are not noticeable, using the following procedures:

- When spot-repairing finishes, extend each color coat slightly beyond the previous coat to blend into the surrounding finish.
- Apply progressively thinner layers of new paint farther from the repair (i.e., blending or drifting).

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 23

Process/Skill Questions

- What is an adjacent panel?
- What is blending?
- What are the procedures for preparing adjacent panels for blending?

Task Number 68

Identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished; determine the materials needed, preparation, and refinishing procedures.

Definition

Identification should include categorizing a selection of interior and exterior composite materials as rigid, semi-rigid, or flexible.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 24

Process/Skill Questions

- What are the differences between rigid and semi-rigid composite materials? Give examples of each type.
- What are some advantages of using composite materials in today's automobiles?

Task Number 69

Identify metal parts to be refinished; determine the materials needed, preparation, and refinishing procedures.

Definition

Identification includes naming the aluminum part to be refinished and describing its associated cleaning material and procedure.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
B. Surface Preparation
Task 25

Process/Skill Questions

- What preparation is needed when refinishing aluminum parts?
- What are the benefits of using aluminum in auto body construction?
- What safety procedures should you follow when refinishing aluminum parts?

Operating Spray Gun and Related Equipment
Task Number 70

Inspect, clean, and determine the condition of spray guns and related equipment (e.g., air hoses, regulators, air lines, air source, spray environment).

Definition

Spray guns and related equipment should be thoroughly checked and cleaned immediately after each use in accordance with the following procedures:

- Do not immerse the gun in solvent.
- Do not use caustic alkaline solutions for cleaning the gun.
- Lubricate the gun at the end of each workday.
- Place a drop or two of light oil on the fluid needle packing, air valve packing, and the trigger bearing screw.
- Lubricate the fluid needle with spray gun lube.
- Follow the manufacturer’s specifications.

Cleaning a siphon-feed gun should include the following steps:

- Loosen the cup from the gun.
- Unscrew the air cap two or three turns while the paint tube is still in the cup.
- Empty the cup of material, and refill it with a small quantity of cleaning solvent.
- Wipe off the exterior of the gun with a solvent-soaked rag, and remove the air cap.
- Clean the cap by immersing it in fresh solvent.
- Soak the cap in solvent if the small holes in it become clogged again and, if necessary, use a wooden toothpick to dislodge stubborn material.
- Do not use a wire or nail to clean small passages.

Cleaning a pressure-feed system should include the following steps:

- Back off the regulator-adjusting screw, and release the pressure from the tank by triggering the relief valve or the safety valve.
- Loosen the spray gun’s air cap approximately three turns.
- Remove the fluid hose from the gun, and attach it to a hose cleaner.
- Clean the air cap.
- Clean out the tank, and reassemble the system for future use.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
C. Spray Gun and Related Equipment Operation
Task 1
Process/Skill Questions

- How is the pattern on a spray gun determined?
- What effect does the air hose have on air pressure?
- Why is it important to keep spray equipment clean?

Task Number 71

Select the spray gun setup (e.g., fluid needle, nozzle, cap) for product being applied.

Definition

Setup should include

- determining the type of spray gun and material, according to manufacturer's specifications
- performing a spray pattern test on a piece of paper to check the operation of the spray gun before attempting to paint the vehicle.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
C. Spray Gun and Related Equipment Operation
Task 2

Process/Skill Questions

- Why is it necessary to test a spray gun?
- What testing procedures should be used?
- Why are there different sizes of air caps?

Task Number 72

Test and adjust a spray gun using fluid, air, and pattern control valves.

Definition
Procedures should include the setup of spray equipment.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
C. Spray Gun and Related Equipment Operation
Task 3

Process/Skill Questions

- How is a gun adjusted for transfer efficiency?
- How does one know if a spray gun is in compliance with EPA standards?

Task Number 73

Demonstrate an understanding of the operation of pressure spray equipment.

Definition

Procedures should include setup per manufacturer's specifications.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
C. Spray Gun and Related Equipment Operation
Task 4

Process/Skill Questions

- How is a gun adjusted for transfer efficiency?
- How does one know if a spray gun is in compliance with EPA standards?

Mixing, Matching, and Applying Paint
Task Number 74

Identify the color code by the manufacturer’s vehicle information label.

Definition

Procedures to determine the type and color of paint on a vehicle should include the following steps:

- Locate the type and color of paint printed on a plate on a vehicle’s doorframe, firewall, cowl, or other location.
- Translate the code into the manufacturer’s color.
- Locate the color by the code listed in a paint chip book or a color reference book.
- Note how age, environment, and care have affected the color of the original finish.
- Request another technician’s opinion to verify color match.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 1

Process/Skill Questions

- Where are paint codes located on GM, Chrysler, and Ford vehicles?
- Why is it important to have the correct paint code?
- What are alternatives regarding paint codes?

Task Number 75

Shake, stir, reduce, catalyze or activate, and strain refinish materials.

Definition

Procedures should include thoroughly mixing and straining the paint before applying it to the surface, following manufacturer's guidelines. Process could include these steps:

- Shaking or agitating the paint to properly mix it, especially with metallic paint because heavier metallic particles settle on the bottom.
• Stirring the paint to keep the consistency of it throughout the job.
• Reducing the paint, which is used to make the mixture the right thickness.
• Catalyzing or activating the paint to cause or speed up a chemical reaction, speeding, curing, and making it more durable.
• Straining the paint to ensure no dirt or foreign material is in it.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 2

Process/Skill Questions

• How does shaking and stirring affect the final product?
• What does a catalyzer or activator do?
• Why is it necessary to take extra precautions when straining paint?

Task Number 76

Apply finish using appropriate spray techniques (e.g., gun arc, angle, distance, travel speed, spray pattern overlap) for the finish being applied.

Definition

Application should include the following techniques:

• Start the stroke over the masking paper, and as the gun is moved, pull the trigger halfway to release only air.
• When the starting edge of the panel is reached, squeeze the trigger all the way to release the paint.
• Release the trigger halfway to stop the paint flow when directly over the finishing edge.
• Continue the stroke several more inches before reversing the direction and repeating the sequence.
• Application should also follow manufacturer's specifications and avoid the common errors of heeling, arcing, speed of stroke, and spray pattern overlap.
D. Paint Mixing, Matching, and Applying
Task 3

Process/Skill Questions

- What is the effect of gun arc on the final product?
- Why is application speed (speed of stroke) important in the spraying technique?
- Why is spraying distance important in the spraying technique?

Task Number 77

Apply a selected product on a test or let-down panel; check for color match.

Definition

Application should include spraying the panel, using the same techniques as are used to spray the vehicle.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 4

Process/Skill Questions

- What does a let-down panel show?
- How is a let-down panel made?
- When is a let-down panel needed?

Task Number 78

Apply a single-stage topcoat.

Definition

Application should include procedures for
• identifying topcoats
• determining the type and color of the paint already on the vehicle, using a manufacturer’s vehicle information label
• shaking, stirring, reducing, catalyzing, and straining paint as needed, according to manufacturer’s specifications
• applying a selected product on a test let-down panel in accordance with manufacturer’s specifications; checking for a color match
• identifying and mixing paint, using a formula
• tinting color, using the formula to achieve a match.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 5

Process/Skill Questions

• What are the procedures for application?
• What does single stage mean?
• What is the drying time and tack time for single stage?

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Task Number 79

Apply a basecoat or clearcoat for panel blending and panel refinishing.

Definition

Application of a basecoat or clearcoat should include the following steps:

• Examine the finish on the adjacent area.
• Compound a small area of the old paint to bring out the color.
• Follow the manufacturer’s directions for flash time.
• Apply the basecoat, either solvent-borne or waterborne.
• Allow the basecoat to dry.
• Apply the clearcoat.
• Buff after sanding, if necessary.
D. Paint Mixing, Matching, and Applying
Task 6

Process/Skill Questions

• Can the basecoat or clearcoat be resanded before applying clearcoat? Why?
• How many coats of base should be applied?
• What is the recommended grit for prepping the basecoat?

Task Number 80

Apply a basecoat or clearcoat for overall refinishing.

Definition

Application should include buffing and polishing the finish as required, using the following steps:

• Select the appropriate polish for the finish being buffed.
• Sand the area before polishing it, using the appropriate grits.
• Buff the area with a wool or foam pad, using the buffer or polisher on slow speed.
• All procedures must be completed in accordance with manufacturer’s specifications.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 7

Process/Skill Questions

• What are common refinishing imperfections?
• What is the difference between buffing and polishing?
• What tools should be used for denibbing?

Task Number 81

Remove nibs or imperfections from the basecoat.

Definition
Procedures should include cleaning and repairing the surface of composite parts in accordance with manufacturers' specifications and industry guidelines.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 8

Process/Skill Questions

- How are the procedures for refinishing rigid parts different from the procedures for flexible parts?
- What safety procedures must be followed?
- What tools and materials should be used when refinishing semi-rigid or flexible parts?

Task Number 82

Identify product expiration dates as applicable.

Definition

Identification should include following the shelf life for manufacturer’s products.

Task Number 83

Refinish plastic parts.

Definition
Refinishing should include following manufacturer's guidelines for recommended procedures.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 10

Process/Skill Questions

- Why is it important to follow recommended procedures?
- When should we use adhesion promoter?
- How can one determine whether a product is pre-primed?

Task Number 84

Apply multi-stage (e.g., tri-coat) coats for blending or overall refinishing.

Definition

Application should include applying multi-stage (e.g., tri-coat) coats for spot repair, blending, or overall refinishing, according to manufacturer's guidelines.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 11

Process/Skill Questions

- What is the tri-coat system?
- What are the application procedures?
- What safety procedures should be followed when applying multistage coats?

Task Number 85

Identify and mix paint using a formula.
Definition

Procedures should include following the manufacturer’s specifications and guidelines for mixing the paint formula.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 12

Process/Skill Questions

- How is the amount of each color measured?
- What procedures must be completed before adding each color?
- How can a spectrophotometer be used in determining the color of the paint on the vehicle?

Task Number 86

Identify poor hiding colors; determine the necessary action.

Definition

Identification should include

- using the proper undercoat
- following manufacturer’s specifications and guidelines.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 13

Process/Skill Questions

- How can one determine a poor hiding color?
- Why should mixing instructions be followed?
Task Number 87

Tint the color, using a formula, to achieve a blendable match.

Definition

Tinting should include altering the paint color slightly to match the new finish to the old finish.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 14

Process/Skill Questions

- How is a color wheel helpful when tinting colors?
- What is a color tree?
- Can technicians who are color-blind become good paint matchers? Why?

Task Number 88

Identify an alternative color formula to achieve a blendable match.

Definition

Identification should include locating the vehicle identification number (VIN) and alternative color formula(s) through manufacturer’s specifications.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 15

Process/Skill Questions

- Where can one find alternative color formulas?
- When would one need an alternative formula?
• How does one achieve a blendable match?

Task Number 89

Identify the materials equipment and preparation differences between solvent and waterborne technologies.

Definition

Identification should include

• understanding different spray techniques and spray equipment
• following paint manufacturer’s specifications
• determining OEM substrate finish.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
D. Paint Mixing, Matching, and Applying
Task 16

Process/Skill Questions

• What is the difference between solvent and water-based paint?
• What are the different spray techniques and equipment used to apply waterborne paints?
• What temperature solvents should be used?

Identifying Paint Defects--Causes and Cures

Task Number 90

Identify paint defects and their causes.

Definition
Identification should include the following paint defects and their causes:

- Blistering (i.e., raising of the paint surface, air entrapment)
- Blushing (i.e., milky or hazy formation)
- Dry spray appearance
- Presence of fish-eyes (i.e., crater-like openings) in the finish
- Lifting
- Clouding (i.e., mottling and streaking in metallic finishes)
- Orange peel
- Overspray
- Solvent popping in a freshly painted surface
- Sags and runs in a paint surface
- Sanding marks or sand scratch swelling
- Contour mapping or edge mapping while the finish is drying
- Color difference (i.e., off-shade)
- Tape tracking
- Low gloss condition
- Poor adhesion
- Paint cracking (i.e., shrinking, splitting, crowsfeet or line-checking, micro-checking, etc.)
- Corrosion
- Dirt or dust in the paint surface
- Water spotting
- Finish damage caused by bird droppings, tree sap, and other natural causes
- Finish damage caused by airborne contaminants (i.e., acids, soot, rail dust, and other industry-related causes)
- Die-back conditions (i.e., dulling of the paint film, showing haziness)
- Chalking (i.e., oxidation)
- Bleed-through (i.e., staining)

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
E. Paint Defects: Causes and Cures
Task 1—24

Process/Skill Questions

- What are some of the most common paint defects?
- What are some of the most common causes of paint defects?

Task Number 91

Identify paint-defect cures and corrections.
Definition

Identification should include cures and corrections, beginning with the least aggressive and progressing to the most aggressive procedures.

Process/Skill Questions

- What are the most common cures and corrections for paint defects?
- Why should a technician start with the least aggressive procedure?

Task Number 92

Correct pinholing.

Definition

Procedures should include

- identifying the pinholing problem
- determining the cause(s)
- correcting the problem, beginning with the least aggressive procedure.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
E. Paint Defects: Causes and Cures
Task 25

Process/Skill Questions

- What are some causes of pinholing?
- What is the corrective procedure for pinholing?
- What can be done to prevent pinholing?

Task Number 93

Correct buffing-related imperfections (i.e., swirl marks and wheel burns).
Definition

Procedures should include

- identifying the buffing-related imperfection
- determining the cause(s)
- correcting the imperfection, beginning with the least aggressive procedure.

Task Number 94

Identify pigment flotation (color change through film build); correct the cause(s) and the condition.

Definition

Identification should include

- knowing proper spray equipment
- knowing proper spray techniques
- determining the proper temperature range of solvents.
• Why is choosing the right equipment important to attain a proper finish?
• Why is it important to select the correct temperature range?

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### Applying Final Detailing

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### Task Number 95

**Apply decals, transfers, tapes, woodgrains, pinstripes (i.e., painted and taped), etc.**

**Definition**

Application should include following these steps:

- Wash the surface with soap and water.
- Use solvent to clean surfaces that are not newly painted.
- Use a heat gun to stretch decals in contoured areas.
- Take precautions to prevent decal or transfer damage caused by overheating.

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**ASE Education Foundation**

2016 Collision Master Task List

IV. Painting and Refinishing

F. Fine Detail

Task 1

**Process/Skill Questions**

- What tools should be used to apply decals?
- How should the surface be prepared prior to application?
- What safety precautions should be used when applying decals?
- What is used to position the decal?

---

### Task Number 96
Sand, buff, and polish the fresh or existing finish to remove defects as required.

Definition

Procedures should include

- identifying defects and determining the best procedure to correct them
- following manufacturer’s guidelines.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
F. Fine Detail
Task 2

Process/Skill Questions

- Why is it important to select proper materials?
- Which paint defects can be removed?
- Why is a detailed finished important?

Task Number 97

Clean the interior, exterior, and glass.

Definition

Procedures should include cleaning the interior (e.g., seating, dashboard, windows, carpet areas), exterior, and glass. Glass cleaning should include

- identifying surfaces as either glass or plastic
- selecting a high-quality cleaner
- using clean towels according to manufacturer’s specifications
- removing paint overspray from glass surfaces (not plastic) with a razor blade after cleaning.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
F. Fine Detail
Task 3
Process/Skill Questions

- What products are needed for a final cleaning?
- Why is it good to follow a checklist?
- Why should caution be used when waxing a freshly painted car?

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Task Number 98

Clean body openings (i.e., doorjambs and edges, etc.).

Definition

Procedures should include cleaning body openings (i.e., doorjambs and edges, windows, trunk) and other areas not painted. Procedure includes

- cleaning all body openings of dust and paint overspray
- using caution to protect the new finish adjacent to the areas being cleaned.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
F. Fine Detail
Task 4

Process/Skill Questions

- Why does the customer expect the doorjambs to be cleaned?
- What materials should be used to complete this task?
- Why is customer satisfaction so important?

---

Task Number 99

Remove overspray.

Definition

Removal should include

- selecting clean buffing pads
- selecting chemicals and other supplies appropriate for the finish
• buffing or hand-rubbing areas until overspray is removed
• taking precautions to avoid damaging surfaces.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
F. Fine Detail
Task 5

Process/Skill Questions

• How can overspray be removed?
• What is clay?
• What are effective ways to prevent overspray?

Task Number 100

Perform vehicle clean-up; complete quality control using a checklist.

Definition

Procedures should include

• cleaning the entire vehicle prior to delivery
• following standard operating procedures (SOP) for the detail process.

ASE Education Foundation
2016 Collision Master Task List
IV. Painting and Refinishing
F. Fine Detail
Task 6

Process/Skill Questions

• Why is it important to clean the entire vehicle prior to delivery?
• Why is it important to follow a checklist?
Preparation for a Career in Auto Body Repair

Task Number 101

Research opportunities in the auto body repair field.

Definition

Research should include a variety of positions in the field of auto body repair and local employment options for entry-level auto body repair technicians. Research may use the following resources:

- Internet search
- Interviews with body shop employees, parts suppliers, and related businesses
- Reference and trade materials or literature.

Many websites offer career exploration resources, including the Virginia Department of Education's Career Planning Guide.

Process/Skill Questions

- What methods would you use to locate jobs in your area?
- Why did you choose the automotive body repair field as a potential career field?
- What other jobs use automotive body repair technology skills?

Common Career Technical Core

TD6
Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.

Task Number 102

Prepare/update portfolio of current skills.

Definition
Portfolio should consist of a résumé, student competency record, and other industry documentation, including SkillsUSA information.

Process/Skill Questions

• Why is it important to prepare a portfolio?
• What are the steps in creating a portfolio?
• How can the portfolio help in a future career?

Common Career Technical Core

TD6
Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.

Task Number 103

Identify additional ASE (Automotive Service Excellence) and other industry-recognized areas of certification.

Definition

Identification should include the four collision repair and refinish areas that may be certified, as follows:

• Structural Analysis and Damage Repair
• Non-Structural Analysis and Damage Repair (Body Components)
• Mechanical and Electrical Components
• Painting and Refinishing

Process/Skill Questions

• Where can the current ASE standards be found?
• Why is it important to know the ASE standards?
• How can certification benefit your future career choice?

Common Career Technical Core

TD6
Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
Task Number 104

Create a written estimate of repairs.

Definition

The written estimate should include

- calculating price based on repairs, parts, materials, and shop policy
- completing all data in a logical sequence
- writing legibly or recording digitally
- communicating information to the customer.

Process/Skill Questions

- What is the purpose of providing a written estimate?
- What constitutes a total-loss vehicle?
- Who determines whether the damage to a vehicle represents a total loss?

Common Career Technical Core

TD3
Describe the key operational activities required of successful transportation, distribution and logistics facilities.

SOL Correlation by Task

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>English:</th>
<th>History and Social Science:</th>
<th>Science:</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Select and use personal protective equipment (PPE); take necessary precautions with hazardous operations, and materials according to federal, state, and local regulations.</td>
<td>11.5, 12.5</td>
<td>GOVT.15, VUS.8, VUS.14, WHIL.8</td>
<td>CH.1</td>
</tr>
<tr>
<td>40</td>
<td>Identify safety and personal health hazards according to Occupational Safety and Health Administration (OSHA) guidelines and the right to know law.</td>
<td>11.5, 11.8, 12.5, 12.8</td>
<td>GOVT.15, VUS.8, VUS.14</td>
<td>CH.1</td>
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<tr>
<td>41</td>
<td>Inspect the spray environment and equipment to ensure compliance with federal, state, and local regulations, and for safety and cleanliness hazards.</td>
<td>English: 11.5, 12.5</td>
<td></td>
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<tr>
<td>42</td>
<td>Select and use a NIOSH-approved purifying respirator. Inspect its condition, and ensure the fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulations.</td>
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<tr>
<td>43</td>
<td>Select and use a NIOSH-approved supplied air (e.g., Make-up Air, Fresh Air Systems) respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation.</td>
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<tr>
<td>44</td>
<td>Select and use PPE for surface preparation, spray gun and related equipment operation, paint mixing, matching and application, paint defects, and detailing (i.e., gloves, suits, hoods, eye and ear protection, etc.).</td>
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<tr>
<td>45</td>
<td>Inspect, remove, store, protect, and replace exterior trim and components necessary for proper surface preparation.</td>
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<tr>
<td>46</td>
<td>Soap and water-wash an entire vehicle; use the appropriate cleaner to remove contaminants.</td>
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<tr>
<td>47</td>
<td>Inspect and identify the type of finish, surface condition, and film thickness; develop and document a plan for refinishing, using a total product system.</td>
<td>English: 11.1, 11.5, 12.1, 12.5</td>
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<tr>
<td>48</td>
<td>Remove paint finish.</td>
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<tr>
<td>49</td>
<td>Dry- or wet-sand areas to be refinished.</td>
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<tr>
<td>50</td>
<td>Featheredge broken areas to be refinished.</td>
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<tr>
<td>51</td>
<td>Apply suitable metal treatment or primer in accordance with total product systems.</td>
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<tr>
<td>52</td>
<td>Mask and protect other areas that will not be refinished.</td>
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<tr>
<td>53</td>
<td>Demonstrate different masking techniques (e.g., recess or back masking, foam door type).</td>
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<tr>
<td>54</td>
<td>Mix primer, primer-surfacer, and primer-sealer.</td>
<td>Mathematics: A.1</td>
<td></td>
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<tr>
<td>55</td>
<td>Identify a complimentary color or shade of undercoat to improve coverage.</td>
<td>English: 11.5, 12.5</td>
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<tr>
<td>56</td>
<td>Apply primer onto the surface of repaired area.</td>
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<tr>
<td>57</td>
<td>Apply two-component finishing filler to minor surface imperfections.</td>
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<tr>
<td>58</td>
<td>Block-sand the area to which primer-surfacer has been applied.</td>
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<tr>
<td>59</td>
<td>Dry-sand the area to which two-component finishing filler has been applied.</td>
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<tr>
<td>60</td>
<td>Remove dust from the area to be refinished, including cracks or moldings of adjacent areas.</td>
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<tr>
<td>61</td>
<td>Clean the area to be refinished, using a final cleaning solution.</td>
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<tr>
<td>62</td>
<td>Remove, with a tack rag, any dust or lint particles from the area to be refinished.</td>
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<tr>
<td>63</td>
<td>Apply suitable primer sealer to the area being refinished.</td>
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<tr>
<td>64</td>
<td>Scuff-sand to remove nibs or imperfections from a sealer.</td>
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<tr>
<td>65</td>
<td>Apply stone chip-resistant coating.</td>
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<tr>
<td>66</td>
<td>Restore caulking and seam sealers to repaired areas.</td>
<td>English: 11.5, 12.5</td>
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<tr>
<td>67</td>
<td>Prepare adjacent panels for blending.</td>
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<tr>
<td>68</td>
<td>Identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished; determine the materials needed, preparation, and refinishing procedures.</td>
<td>English: 11.5, 12.5</td>
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<tr>
<td>69</td>
<td>Identify metal parts to be refinished; determine the materials needed, preparation, and refinishing procedures.</td>
<td>English: 11.5, 12.5</td>
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<tr>
<td>70</td>
<td>Inspect, clean, and determine the condition of spray guns and related equipment (e.g., air hoses, regulators, air lines, air source, spray environment).</td>
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<tr>
<td>71</td>
<td>Select the spray gun setup (e.g., fluid needle, nozzle, cap) for product being applied.</td>
<td>English: 11.5, 12.5</td>
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<tr>
<td>72</td>
<td>Test and adjust a spray gun using fluid, air, and pattern control valves.</td>
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<td>73</td>
<td>Demonstrate an understanding of the operation of pressure spray equipment.</td>
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<td>74</td>
<td>Identify the color code by the manufacturer’s vehicle information label.</td>
<td>English: 11.5, 12.5</td>
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<td>75</td>
<td>Shake, stir, reduce, catalyze or activate, and strain refinish materials.</td>
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<tr>
<td>76</td>
<td>Apply finish using appropriate spray techniques (e.g., gun arc, angle, distance, travel speed, spray pattern overlap) for the finish being applied.</td>
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<tr>
<td>77</td>
<td>Apply a selected product on a test or let-down panel; check for color match.</td>
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<tr>
<td>78</td>
<td>Apply a single-stage topcoat.</td>
<td>Mathematics: A.1, A.4</td>
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<tr>
<td>79</td>
<td>Apply a basecoat or clearcoat for panel blending and panel refinishing.</td>
<td>English: 11.5, 12.5</td>
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<td>80</td>
<td>Apply a basecoat or clearcoat for overall refinishing.</td>
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<tr>
<td>81</td>
<td>Remove nibs or imperfections from the basecoat.</td>
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<tr>
<td>82</td>
<td>Identify product expiration dates as applicable.</td>
<td>English: 11.5, 12.5</td>
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<tr>
<td>83</td>
<td>Refinish plastic parts.</td>
<td>English: 11.5, 12.5</td>
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<td></td>
<td>Task Description</td>
<td>English:</td>
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<td>84</td>
<td>Apply multi-stage (e.g., tri-coat) coats for blending or overall refinishing.</td>
<td>11.5, 12.5</td>
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<tr>
<td>85</td>
<td>Identify and mix paint using a formula.</td>
<td>11.5, 12.5</td>
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<td>86</td>
<td>Identify poor hiding colors; determine the necessary action.</td>
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<tr>
<td>87</td>
<td>Tint the color, using a formula, to achieve a blendable match.</td>
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<tr>
<td>88</td>
<td>Identify an alternative color formula to achieve a blendable match.</td>
<td>11.5, 12.5</td>
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<tr>
<td>89</td>
<td>Identify the materials equipment and preparation differences between solvent and waterborne technologies.</td>
<td>11.5, 12.5</td>
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<tr>
<td>90</td>
<td>Identify paint defects and their causes.</td>
<td>11.5, 12.5</td>
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<tr>
<td>91</td>
<td>Identify paint-defect cures and corrections.</td>
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<tr>
<td>92</td>
<td>Correct pinholing.</td>
<td>11.5, 12.5</td>
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<tr>
<td>93</td>
<td>Correct buffing-related imperfections (i.e., swirl marks and wheel burns).</td>
<td>11.5, 12.5</td>
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<tr>
<td>94</td>
<td>Identify pigment flotation (color change through film build); correct the cause(s) and the condition.</td>
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<tr>
<td>95</td>
<td>Apply decals, transfers, tapes, woodgrains, pinstripes (i.e., painted and taped), etc.</td>
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<tr>
<td>96</td>
<td>Sand, buff, and polish the fresh or existing finish to remove defects as required.</td>
<td>11.5, 12.5</td>
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<tr>
<td>97</td>
<td>Clean the interior, exterior, and glass.</td>
<td>11.5, 12.5</td>
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<tr>
<td>98</td>
<td>Clean body openings (i.e., doorjambs and edges, etc.).</td>
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<td>99</td>
<td>Remove overspray.</td>
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<td>100</td>
<td>Perform vehicle clean-up; complete quality control using a checklist.</td>
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<td>101</td>
<td>Research opportunities in the auto body repair field.</td>
<td>11.2, 11.8, 12.2, 12.8</td>
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<tr>
<td>102</td>
<td>Prepare/update portfolio of current skills.</td>
<td>11.6, 11.7, 12.6, 12.7</td>
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<tr>
<td>103</td>
<td>Identify additional ASE (Automotive Service Excellence) and other industry-recognized areas of certification.</td>
<td>11.5, 12.5</td>
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<tr>
<td>104</td>
<td>Create a written estimate of repairs.</td>
<td>11.6, 11.7, 12.6, 12.7</td>
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</table>

**Teacher Resources**
Transportation Career Modules

The following transportation career modules were correlated to this course in March 2012 as part of Careers in Transportation Curriculum Project funded by the US Department of Transportation. Modules include field-tested activities and lesson plans that require students to apply knowledge and skills learned in this course and may encourage students to explore related careers in the Transportation, Distribution, and Logistics Career Cluster.

Click on the link to access the Careers in Transportation Curriculum Project site and scroll down to search for modules by ID number and title.

Related Career Module(s):
- ID#: ALL205-101; Title: Introduction to Transportation, Distribution and Logistics
- ID#: ALL506-102 Title: What Is Transportation?
- ID#: ALL205-101 Title: Introduction to Transportation, Distribution and Logistics
- ID#: SS615-201 Title: Transportation Industry Studies
- ID#: TO110-219 Title: Road Trip!
- ID#: TO201-122 Title: Inflated Tire Safety
- ID#: TO204-104 Title: Trucking 101
- ID#: TO619-110 Title: Alternative Fuels

Entrepreneurship Infusion Units

Entrepreneurship Infusion Units may be used to help students achieve additional, focused competencies and enhance the validated tasks/competencies related to identifying and starting a new business venture. Because the unit is a complement to certain designated courses and is not mandatory, all tasks/competencies are marked “optional.”
Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- ASE Certification Examinations
- ASE Entry-Level Certification Examinations
- College and Work Readiness Assessment (CWRA+)
- Collision Repair and Refinishing Technology Assessment
- Collision Repair Assessment
- Customer Service Examination
- Customer Service Specialist (CSS) Examination
- Mobile Communications and Electronics Installer (MCEI) Examination
- National Career Readiness Certificate Assessment
- Non-Structural Technician-ProLevel 1 Certification Test
- Professional Communications Certification Examination
- Refinish Technician-ProLevel 1 Certification Test
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.

- Auto Body Technology I (8676/36 weeks, 140 hours)

Career Cluster: Transportation, Distribution and Logistics

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<thead>
<tr>
<th>Pathway</th>
<th>Occupations</th>
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<tbody>
<tr>
<td>Facility and Mobile Equipment Maintenance</td>
<td>Aircraft Structure, Surfaces, Rigging, and Systems Assembler</td>
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<td>Automotive Body and Related Repairer</td>
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<td></td>
<td>Automotive Glass Installer and Repairer</td>
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<td></td>
<td>Electrical and Electronic Installer</td>
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<td></td>
<td>Electrical and Electronic Repairer</td>
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