

COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	Paint and Refinishing 4
COURSE NUMBER	ACRT 0262
DIVISION	Career and Technical Education
DEPARTMENT	ACRT
CIP CODE	47.0603
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 2 Lab: 4 Clinical: X
PREREQUISITES	ACRT 0100 Safety & Orientation ACRT 0101 OSHA 10 ACRT 0160 Paint & Refinishing 1 ACRT 0260 Paint & Refinishing 2 ACRT 0261 Paint & Refinishing 3
COREQUISITES	None
COURSE PLACEMENT	None

COURSE DESCRIPTION

Through a variety of classroom and/or shop/lab learning and assessment activities, students in this course will: apply exemplary safety procedures in all areas of auto body painting and refinishing; perform proper cleaning procedures for a refinish; prepare adjacent panels for blending; prepare plastic panels for refinishing; protect all non-finished areas of a vehicle; operate high and low volume/pressure spray gun operations for painting and refinishing; perform all paint system applications on an automobile; apply appropriate paint color matching and mixing procedures; tint color using formula to achieve a blendable match; explore the causes, effects and correction of buffing related imperfections; explore the causes, effects and correction of pigment flotation; measure mil thickness; apply decals, transfers, tapes, woodgrains, pinstripes to an automobile; apply buffing and polishing techniques to remove defects; apply cleaning techniques to automobile interior, exterior, glass and body openings; and remove overspray.

PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

https://kansasregents.org/workforce_development/program-alignment

PROGRAM LEARNING OUTCOMES

1. Demonstrate adherence to safety and pollution prevention standards according to OSHA and EPA regulations.
2. Demonstrate the ability to communicate effectively in workplace scenarios with an appropriate level of preparedness for daily tasks and assignments.
3. Demonstrate the ability to execute panel preparation, application of refinishing materials, and removal of paint defects.

TEXTBOOKS

<http://kckccbookstore.com/>

METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

- I. 4.A Safety Precautions
- II. 4.B Surface Preparation
- III. 4.C Spray Gun and Related Equipment Operation
- IV. 4.D Paint Mixing, Matching, and Applying
- V. 4.E Paint Defects - Causes and Cures
- VI. 4.F Final Detail

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

- A. Use shop safety equipment according to protocol
 1. Identify and take necessary precautions with hazardous operations and materials according to federal, state, and local regulations. (HP-I) (4.A.1)(EDS02 module 1 REF01 module 4 REF03 modules 2,4 WKR01 module3).
 2. Identify safety and personal health hazards according to OSHA guidelines. (HP-I) (4.A.2)(WKR01 module1).
 3. Inspect spray environment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards. (HP-I)(4.A.3)(EDS02 module 1 REF01 module 3 WKR01 module 2).
 4. Select and use the NIOSH approved personal sanding respirator. The student will be able to inspect condition and ensure fit and operation. The student will be able to perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation. (HP-I) (4.A.4)(WKR01 module 4).
 5. Select and use the NIOSH approved (Fresh Air Make-up System) personal painting/refinishing respirator system. The student will be able to perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation. (HP-I)(4.A.5)(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) (4.A.6)(EDS02 modules 1,2,3,4,5,6,7 REF02 module 2 REF03 modules 2,4 WKR01 module 4.
- B. Demonstrate proper substrate preparation for refinishing

7. Inspect, remove, store, and replace exterior trim and components necessary for proper surface preparation. (HP-I)(4.B.1)(DAM04 v.2.1 module 4 DAM04 v.2.2 module 3 TRM01 modules 3,6,7).
8. Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants. (HP-I)(4.B.2)(EDS02 module 3 REF02 module 1 REF04 module 1).
9. Inspect and identify substrate, type of finish, surface condition, and film thickness; develop and document a plan for refinishing using a total product system. *(HP-I)(4.B.3)(DAM v.2.4 module 3 DAM01 v.2.5 module 4 EDS02 module 1).
10. Remove paint finish. (HP-I)(4.B.4)(EDS02 module 3 REF module 2).
11. Dry or wet sand areas to be refinished. (HP-I)(4.B.5)(EDS02 module 3 REF02 module 4 REF03 module 2).
12. Featheredge damaged areas to be refinished. (HP-I)(4.B.6)(EDS02 module 3 REF02 module 4).
13. Apply suitable metal treatment or primer in accordance with total product systems. (HP-I)(4.B.7)(CPS01 module 3 EDS02 module 4 REF02 module 4).
14. Mask and protect other areas that will not be refinished. (HP-I) (4.B.8)(EDS02 module 3 REF02 module 2).
15. Mix primer, primer-surfacer or primer-sealer. (HP-I) (4.B.9)(EDS02 module 4 REF01 module 5 REF02 module 4 REF03 module 4).
16. Apply primer onto surface of repaired area. (HP-I) (4.B.10)(EDS02 module 4 REF02 module 4).
17. Apply two-component finishing filler to minor surface imperfections. (HP-I) (4.B.11)(EDS01 module 3 STS01 module 2).
18. Dry or wet sand area to which primer-surfacer has been applied. (HP-I)(4.B.12)(EDS02 module 4 REF02 module 4).
19. Dry sand area to which two-component finishing filler has been applied. (HP-I)(4.B.13)(EDS01 module 3 STS01 module 2).
20. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. (HP-I)(4.B.14)(EDS02 module 3 REF02 module 4 REF03 modules 3,4).
21. Clean area to be refinished using a final cleaning solution. (HP-I)(4.B.15)(EDS02 module 3 REF03 module 3).
22. Remove, with a tack rag, any dust or lint particles from the area to be refinished. (HP-I)(4.B.16)(EDS02 module 5 REF02 modules 3,4 REF03 module 4).
23. Apply suitable sealer to the area being refinished when sealing is needed or desirable. (HP-I)(4.B.17)(EDS02 module 4 REF03 module 4).
24. Scuff sand to remove nibs or imperfections from a sealer. (HP-I)(4.B.18)(EDS02 module 4).
25. Apply stone chip resistant coating. (HP-G)(4.B.19)(CPS01 module 4 EDS02 module 5 REF03 module 3).
26. Restore corrosion-resistant coatings, caulking, and seam sealers to repaired areas. (HP-I)(4.B.20)(CPS01 modules 3,4 EDS02 modules 4,5 REF02 module 5).
27. Prepare adjacent panels for blending. (HP-I)(4.B.21)(EDS02 module 5 REF02 modules 4,5).
28. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials, preparation, and refinishing procedures. (HP-I)(4.B.22)(EDS02 module 5 REF02 module 4).
29. Identify aluminum parts to be refinished; determine the materials, preparation, and refinishing procedures. (HP-G)(4.B.23)(EDS02 module 4 REF02 modules 1,4).

C. Select appropriate types of undercoating

30. Mask and protect other areas that will not be refinished. (HP-I) (4.B.8)(EDS02 module 3 REF02 module 2).
 31. Mix primer, primer-surfacer or primer-sealer. (HP-I) (4.B.9)(EDS02 module 4 REF01 module 5 REF02 module 4 REF03 module 4).
 32. Apply primer onto surface of repaired area. (HP-I) (4.B.10)(EDS02 module 4 REF02 module 4).
 33. Apply two-component finishing filler to minor surface imperfections. (HP-I) (4.B.11)(EDS01 module 3 STS01 module 2).
 34. Dry or wet sand area to which primer-surfacer has been applied. (HP-I)(4.B.12)(EDS02 module 4 REF02 module 4).
 35. Dry sand area to which two-component finishing filler has been applied. (HP-I)(4.B.13)(EDS01 module 3 STS01 module 2).
 36. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. (HP-I)(4.B.14)(EDS02 module 3 REF02 module 4 REF03 modules 3,4).
 37. Clean area to be refinished using a final cleaning solution. (HP-I)(4.B.15)(EDS02 module 3 REF03 module 3).
 38. Remove, with a tack rag, any dust or lint particles from the area to be refinished. (HP-I)(4.B.16)(EDS02 module 5 REF02 modules 3,4 REF03 module 4).
 39. Apply suitable sealer to the area being refinished when sealing is needed or desirable. (HP-I) (4.B.17)(EDS02 module 4 REF03 module 4).
 40. Scuff sand to remove nibs or imperfections from a sealer. (HP-I)(4.B.18)(EDS02 module 4).
 41. Apply stone chip resistant coating. (HP-G)(4.B.19)(CPS01 module 4 EDS02 module 5 REF03 module 3).
 42. Restore corrosion-resistant coatings, caulking, and seam sealers to repaired areas. (HP-I)(4.B.20)(CPS01 modules 3,4 EDS02 modules 4,5 REF02 module 5).
 43. Prepare adjacent panels for blending. (HP-I)(4.B.21)(EDS02 module 5 REF02 modules 4,5).
 44. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials, preparation, and refinishing procedures. (HP-I)(4.B.22)(EDS02 module 5 REF02 module 4).
 45. Identify aluminum parts to be refinished; determine the materials, preparation, and refinishing procedures. (HP-G)(4.B.23)(EDS02 module 4 REF02 modules 1,4).
 46. Inspect and identify substrate, type of finishing, surface condition, and film thickness, develop and document a plan for refinishing using a total product system. (HP-I) (4.B.3).
- D. Use cleaning procedures necessary for refinishing preparation
47. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials, preparation, and refinishing procedures. (HP-I)(4.B.22)(EDS02 module 5 REF02 module 4).
 48. Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants. (HP-I) (4.B.2).
 49. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. (HP-I) (4.B.14).
 50. Clean areas to be refinished using a final cleaning solution. (HP-I)(4.B.15)
 51. Remove, with a tack rag, any dust or lint particles from the area to be refinished. (HP-I)(4.B.16).
 52. Scuff sand to remove nibs or imperfections from a sealer. (HP-I)(4.B.18).
 53. Identify aluminum parts to be refinished; determine the materials, preparation and refinishing procedures. (HP-G)(4.B.23).

E. Protect surface areas to remain unpainted

54. Inspect, remove, store, and replace exterior trim and components necessary for proper surface preparation. (HP-I)(4.B.1)(DAM04 v.2.1 module 4 DAM04 v.2.2 module 3 TRM01 modules 3,6,7)
55. Mask and protect other areas that will not be refinished. (HP-I) (4.B.8)(EDS02 module 3 REF02 module 2).

F. Demonstrate appropriate high volume and low pressure spray gun operation

56. Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, and spray environment). (HP-I)(4.C.1)(EDS02 module 2 REF module 1).
57. Check and adjust spray gun operation for HVLP (high volume, low pressure) or LVLP (low volume, low pressure) guns. (HP-I)(4.C.2)(EDS02 module 2 REF module 1 REF02 module 3).
58. Set-up (fluid needle, nozzle, and cap), adjust, and test spray gun using fluid, air, and pattern control valves. (HP-I)(4.C.3)(EDS02 module 2 REF module 1 REF02 module 3).

G. Apply procedures for mixing, catalyzing and activating paint

59. Determine type and color of paint already on vehicle by manufacturer s vehicle information label. (HP-I)(4.D.1)(DAM01 module 4 EDS02 module 3 REF03 module 1).
60. Shake, stir, reduce, catalyze/activate, and strain paint. (HP-I)(4.D.2)(EDS02 module 2,4 REF03 module 4).
61. Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed, and spray pattern overlap) for the finish being applied. (HP-I)(4.D.3)(EDS02 module 2 REF02 module 3).
62. Apply selected product on test and let-down panel; check for color match. (HP-I) (4.D.4)(REF03 module 2).
63. Apply single stage topcoat. (HP-I)(4.D.5)(EDS02 module 5 REF03 module 4).
64. Apply basecoat/clearcoat for panel blending or partial refinishing. (HP-I)(4.D.6)(EDS02 module 5 REF03 modules 3,4).
65. Apply basecoat/clearcoat for overall refinishing. (HP-G)(4.D.7)(EDS02 module 5 REF03 module 4).
66. Denib, buff, and polish finishes where necessary. (HP-I)(4.D.8)(REF04 module 2).
67. Refinish rigid, semi-rigid, and flexible plastic parts. (HP-G)(4.D.9)(EDS02 module 5 REF03 modules 3,4).
68. Apply multi-stage coats for panel blending or overall refinishing. (HP-G)(4.D.10)(EDS02 module 5 REF03 module 4).
69. Identify and mix paint using a formula. (HP-G)(4.D.11)(EDS02 module 4 REF01 module 5).
70. Identify poor hiding colors; determine necessary action. (HP-G)(4.D.12)(EDS02 module 6 REF03 module 3).
71. Tint color using formula to achieve a blendable match. (HP-G)(4.D.13)(REF03 module 5).
72. Identify alternative color formula to achieve a blendable match. (HP-G)(4.D.14)(REF03 module 2).

H. Apply paint to an auto body using variety of spray techniques

73. Determine type and color of paint already on vehicle by manufacturer s vehicle information label. (HP-I)(4.D.1)(DAM01 module 4 EDS02 module 3 REF03 module 1).

74. Shake, stir, reduce, catalyze/activate, and strain paint. (HP-I)(4.D.2)(EDS02 module 2,4 REF03 module 4).
 75. Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed, and spray pattern overlap) for the finish being applied. (HP-I)(4.D.3)(EDS02 module 2 REF02 module 3).
 76. Apply selected product on test and let-down panel; check for color match. (HP-I)(4.D.4)(REF03 module 2).
 77. Identify and mix paint using a formula. (HP-G)(4.D.11)(EDS02 module 4 REF01 module 5).
 78. Identify poor hiding colors; determine necessary action. (HP-G)(4.D.12)(EDS02 module 6 REF03 module 3).
 79. Tint color using formula to achieve a blendable match. (HP-G)(4.D.13)(REF03 module 5).
 80. Identify alternative color formula to achieve a blendable match. (HP-G)(4.D.14)(REF03 module 2).
 81. Apply single stage topcoat. (HP-I) (4.D.5).
 82. Apply basecoat/clearcoat for panel blending or partial refinishing (HP-I)(4.D.6).
 83. Apply basecoat/clearcoat for overall refinishing. (HP-G)(4.D.7).
 84. Refinish rigid, semi-rigid, and flexible plastic parts. (HP-G)(4.D.9).
 85. Apply multi-stage coats for panel blending and overall refinishing. (HP-G)(4.D.10)s.
- I. Tint color using formula to achieve a blendable match
86. Tint color using formula to achieve a blendable match. (HP-G)(4.D.13)(REF03 module 5).
- J. Explore the causes, effects and correction of buffing-related imperfections
87. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. (HP-G)(4.E.27)(REF04 module 2).
- K. Explore the causes, effects and correction of pigment flotation
88. The student will be able to identify pigment flotation (color change through film build); determine the cause(s) and correct the condition. (HP-G)(4.E.28)(EDS02 module 6 REF03 module 3).
- L. Measure mil thickness
89. Measure mil thickness. (HP-I)(4.E.29)(EDS02 module 3REF02 module 1 REF04 module 1).
- M. Correct the cause and defect in an auto body paint job
90. Identify blistering (rising of the paint surface); determine the cause(s) and correct the condition. (HP-G)(4.E.1)(EDS02 module 6 REF03 module 3).
 91. Identify blushing (milky or hazy formation); determine the cause(s) and correct the condition. (HP-G)(4.E.2)(EDS02 module 6).
 92. Identify a dry spray appearance in the paint surface; determine the cause(s) and correct the condition. (HP-G)(4.E.3)(EDS02 module 6 REF03 module 3).
 93. Identify the presence of fish-eyes (crater-like openings) in the finish; determine the cause(s) and correct the condition. (HP-G)(4.E.4)(EDS02 module 6 REF03 module 3).
 94. Identify lifting; determine the cause(s) and correct the condition. (HP-G)(4.E.5)(EDS02 module 6 REF03 module 3).
 95. Identify clouding (mottling and streaking in metallic finishes); determine the cause(s) and correct the condition. (HP-G)(4.E.6)(EDS02 module 6).

96. Identify orange peel; determine the cause(s) and correct the condition. (HP-I) (4.E.7)(EDS02 module 6 REF03 module 3 REF04 module 2).
97. Identify overspray; determine the cause(s) and correct the condition. (HP-G) (4.E.8)(DAM01 v.2.4 module 3 DAM01v.2.5 module 4 EDS02 module 6 REF04 module 2).
98. Identify solvent popping in freshly painted surface; determine the cause(s) and correct the condition. (HP-G)(4.E.9)(EDS02 module 6 REF03 module 3).
99. Identify sags and runs in paint surface; determine the cause(s) and correct the condition. (HP-G)(4.E.10)(EDS02 module 6 REF03 module 3 REF04 module 2).
100. Identify sanding marks (sandscratch swelling); determine the cause(s) and correct the condition. (HP-G)(4.E.11)(DAM01 v.2.4 module 3 DAM01v.2.5 module 4 EDS02 module 6 REF03 module 3 REF04 module 2).
101. Identify contour mapping (shrinking and splitting) while finish is drying; determine the cause(s) and correct the condition. (HP-G)(4.E.12)(EDS02 module 6 REF02 module 1).
102. Identify color difference (off-shade); determine the cause(s) and correct the condition. (HP-G)(4.E.13)(EDS02 module 6 REF03 module 1).
103. Identify tape tracking; determine the cause(s) and correct the condition. (HP-G)(4.E.14)(EDS02 module 6 REF03 module 3).
104. Identify low gloss condition; determine the cause(s) and correct the condition. (HP-G)(4.E.15)(EDS02 module 6 REF03 module 3 REF04 module 2).
105. Identify poor adhesion; determine the cause(s) and correct the condition. (HP-G)(4.E.16)(EDS02 module 6 REF03 module 3).
106. Identify paint cracking (crowsfeet or line-checking, micro-checking, etc.); determine the cause(s) and correct the condition. (HP-G)(4.E.17)(EDS02 module 6).
107. Identify corrosion; determine the cause(s) and correct the condition. (HP-G)(4.E.18) (EDS02 module 6 REF02 module 3 REF03 module 3).
108. Identify dirt or dust in the paint surface; determine the cause(s) and correct the condition. (HP-I)(4.E.19)(DAM01 v.2.4 module 3 DAM01v.2.5 module 4 EDS02 module 6 REF03 module 3 REF04 modules 1,2).
109. Identify water spotting; determine the cause(s) and correct the condition. (HP-G)(4.E.20)(REF04 module 2).
110. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition. (HP-G)(4.E.21)(DAM01 v.2.4 module 3 DAM01v.2.5 module 5 REF04 module 2).
111. Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition. (HP-G)(4.E.22)(DAM01 v.2.4 module 3 DAM01v.2.5 module 5 REF04 module 2).
112. Identify die-back conditions (dulling of the paint film showing haziness); determine the cause(s) and correct the condition. (HP-G)(4.E.23)(EDS02 module 6 REF03 module 3).
113. Identify chalking (oxidation); determine the cause(s) and correct the condition. (HP-G)(4.E.24)(EDS02 module 6).
114. Identify bleed-through (staining); determine the cause(s) and correct the condition. (HP-G)(4.E.25)(EDS02 module 6).
115. Identify pin-holing; determine the cause(s) and correct the condition. (HP-G) (4.E.26)(EDS02 module 6).
116. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. (HP-G)(4.E.27)(REF04 module 2).
117. Identify pigment flotation (color change through film build); determine the cause(s) and correct the condition. (HP-G)(4.E.28)(EDS02 module 6 REF03 module 3).

118. Measure mil thickness. (HP-I)(4.E.29)(EDS02 module 3 REF02 module 1 REF04 module 1).
- N. Apply color, sanding and buffing techniques to correct surface defects
119. Apply decals, transfers, tapes, woodgrains, pinstripes (painted and taped), etc. (HP-G)(4.F.1)(TRM01 module 4).
120. Buff and polish finish to remove defects as required. (HP-I)(4.F.2)(REF04 module 2).
121. Clean interior, exterior, and glass. (HP-I)(4.F.3)(REF03 module 3).
122. Clean body openings (door jambs and edges, etc.). (HP-I)(4.F.4)(REF04 module 3).
123. Remove overspray. (HP-I)(4.F.5)(EDS01 module 6 REF04 module 2).

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

College Catalog

<https://www.kckcc.edu/academics/catalog/index.html>

College Policies and Statements

<https://www.kckcc.edu/about/policies-statements/index.html>

Accessibility and Accommodations

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.