HIGHLAND COMMUNITY COLLEGE

**Syllabus**
ACR155 Paint & Refinishing II
3 Credit Hours (Lecture & Lab)
Prerequisites: ACR105
C & I Revision Date: 02/14/2025

## Department:

Automotive Collision and Refinishing Technology

## Course Description:

Through a variety of classroom and/or shop/lab learning and assessment activities, students in this course will: select proper personal protective equipment; perform proper shop operations according to OSHA Guidelines; remove paint coatings; apply corrosion resistant coatings; demonstrate proper spray gun operation and cleaning procedures; select proper painting and substrate materials for projects; analyze paint defects, causes and cures; repair paint defects; measure paint mil thickness; and determine final detail procedures for given projects.

## Course Competencies:

The learning outcomes and competencies detailed in this syllabus meet or exceed the learning outcomes and competencies specified by the Postsecondary Technical Education Authority (TEA) for this course as approved by the Kansas Board of Regents.

Upon completion of the course, the student should be able to:

1. Select proper personal protective equipment
    a. Identify and take necessary precautions with hazardous operations and materials according to federal, state, and local regulations. HP-I
    b. Identify safety and personal health hazards according to OSHA guidelines. HP-I
    c. Inspect spray environment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards. HP-I
    d. Select and use the NIOSH approved personal sanding respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation. HP-I
    e. Select and use the NIOSH approved (Fresh Air Make-up System) personal painting/refinishing respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation. HP-I
    f. 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
2. Perform proper shop operations according to OSHA Guidelines
    a. Identify and take necessary precautions with hazardous operations and materials according to federal, state, and local regulations. HP-I
    b. Identify safety and personal health hazards according to OSHA guidelines. HP-I
    c. Inspect spray environment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards. HP-I

d. Select and use the NIOSH approved personal sanding respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation. HP-I
e. Select and use the NIOSH approved (Fresh Air Make-up System) personal painting/refinishing respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation. HP-I
f. Select and use the proper personal safety equipment for surface preparation, spray gun and related equipment operation, paint mixing, matching and application

3. Remove paint coatings
    a. Inspect, remove, store, and replace exterior trim and components necessary for proper surface preparation. HP-I
    b. Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants. HP-I
    c. 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
    d. Remove paint finish. HP-I
    e. Dry or wet sand areas to be refinished. HP-I
    f. Featheredge damaged areas to be refinished. HP-I
    g. Dry or wet sand area to which primer-surfacer has been applied. HP-I
    h. Dry sand area to which two-component finishing filler has been applied. HP-I
    i. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. HP-I
    j. Clean area to be refinished using a final cleaning solution. HP-I
    k. Remove, with a tack rag, any dust or lint particles from the area to be refinished. HPI
    l. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials, preparation, and refinishing procedures. HP-I
    m. Identify aluminum parts to be refinished; determine the materials, preparation, and refinishing procedures. HP-G
4. Apply corrosion resistant coatings
    a. Apply suitable metal treatment or primer in accordance with total product systems. HP-I
    b. Mask and protect other areas that will not be refinished. HP-I
    c. Mix primer, primer-surfacer or primer-sealer. HP-I
    d. Apply primer onto surface of repaired area. HP-I
    e. Apply two-component finishing filler to minor surface imperfections. HP-I
    f. Dry or wet sand area to which primer-surfacer has been applied. HP-I
    g. Dry sand area to which two-component finishing filler has been applied. HP-I
    h. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. HP-I
    i. Clean area to be refinished using a final cleaning solution. HP-I
    j. Remove, with a tack rag, any dust or lint particles from the area to be refinished. HPI
    k. Apply suitable sealer to the area being refinished when sealing is needed or desirable. HP-I
    l. Restore corrosion-resistant coatings, caulking, and seam sealers to repaired areas. HP-I
5. Demonstrate proper spray gun operation and cleaning procedures
    a. Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, and spray environment). HP-I
    b. Check and adjust spray gun operation for HVLP (high volume, low pressure) or LVLP (low volume, low pressure) guns. HP-I

c. Set-up (fluid needle, nozzle, and cap), adjust, and test spray gun using fluid, air, and pattern control valves. HP-I

6. Select proper painting and substrate materials for projects
    a. Determine type and color of paint already on vehicle by manufacturer s vehicle information label. HP-I
    b. Shake, stir, reduce, catalyze/activate, and strain paint. HP-I
    c. 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
    d. Apply selected product on test and let-down panel; check for color match. HP-I
    e. Apply single stage topcoat. HP-I
    f. Apply basecoat/clearcoat for panel blending or partial refinishing. HP-I
    g. Apply basecoat/clearcoat for overall refinishing. HP-G
    h. Denib, buff, and polish finishes where necessary. HP-I
    i. Refinish rigid, semi-rigid, and flexible plastic parts. HP-G
    j. Apply multi-stage coats for panel blending or overall refinishing. HP-G
    k. Identify and mix paint using a formula. HP-G
    l. Identify poor hiding colors; determine necessary action. HP-G
    m. Tint color using formula to achieve a blendable match. HP-G
    n. Identify alternative color formula to achieve a blendable match. HP-G
7. Analyze paint defects, causes and cures
    a. Identify blistering (raising of the paint surface); determine the cause(s) and correct the condition. HP-G
    b. Identify blushing (milky or hazy formation); determine the cause(s) and correct the condition. HP-G
    c. Identify a dry spray appearance in the paint surface; determine the cause(s) and correct the condition. HP-G
    d. Identify the presence of fish-eyes (crater-like openings) in the finish; determine the cause(s) and correct the condition. HP-G
    e. Identify lifting; determine the cause(s) and correct the condition. HP-G
    f. Identify clouding (mottling and streaking in metallic finishes); determine the cause(s) and correct the condition. HP-G
    g. Identify orange peel; determine the cause(s) and correct the condition. HP-I
    h. Identify overspray; determine the cause(s) and correct the condition. HP-G
    i. Identify solvent popping in freshly painted surface; determine the cause(s) and correct the condition. HP-G
    j. Identify sags and runs in paint surface; determine the cause(s) and correct the
    k. condition. HP-G
    l. Identify sanding marks (sandscratch swelling); determine the cause(s) and correct the condition. HP-G
    m. Identify contour mapping (shrinking and splitting) while finish is drying; determine the cause(s) and correct the condition. HP-G Identify color difference (off-shade); determine the cause(s) and correct the condition. HP-G
    n. Identify tape tracking; determine the cause(s) and correct the condition. HP-G Identify low gloss condition; determine the cause(s) and correct the condition. HP-G
    o. Identify poor adhesion; determine the cause(s) and correct the condition. HP-G
    p. Identify paint cracking (crowsfeet or line-checking, micro-checking, etc.); determine the cause(s) and correct the condition. HP-G

q. Identify corrosion; determine the cause(s) and correct the condition. HP-G
r. Identify dirt or dust in the paint surface; determine the cause(s) and correct the condition. HP-I
s. Identify water spotting; determine the cause(s) and correct the condition. HP-G
t. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition. HP-G
u. Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition. HP-G
v. Identify die-back conditions (dulling of the paint film showing haziness); determine the cause(s) and correct the condition. HP-G
w. Identify chalking (oxidation); determine the cause(s) and correct the condition. HP-G
x. Identify bleed-through (staining); determine the cause(s) and correct the condition. HP-G
y. Identify pin-holing; determine the cause(s) and correct the condition. HP-G
z. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. HP-G
aa. Identify pigment flotation (color change through film build); determine the cause(s)and correct the condition. HP-G
bb. Measure mil thickness. HP-I

8. Repair paint defects
    a. Identify blistering (raising of the paint surface); determine the cause(s) and correct the condition. HP-G
    b. Identify blushing (milky or hazy formation); determine the cause(s) and correct the condition. HP-G
    c. Identify a dry spray appearance in the paint surface; determine the cause(s) and correct the condition. HP-G
    d. Identify the presence of fish-eyes (crater-like openings) in the finish; determine the cause(s) and correct the condition. HP-G
    e. Identify lifting; determine the cause(s) and correct the condition. HP-G
    f. Identify clouding (mottling and streaking in metallic finishes); determine the cause(s)and correct the condition. HP-G
    g. Identify orange peel; determine the cause(s) and correct the condition. HP-I
    h. Identify overspray; determine the cause(s) and correct the condition. HP-G
    i. Identify solvent popping in freshly painted surface; determine the cause(s) and correct the condition. HP-G
    j. Identify sags and runs in paint surface; determine the cause(s) and correct the condition. HP-G
    k. Identify sanding marks (sandscratch swelling); determine the cause(s) and correct the condition. HP-G
    l. Identify contour mapping (shrinking and splitting) while finish is drying; determine the cause(s) and correct the condition. HP-G
    m. Identify color difference (off-shade); determine the cause(s) and correct the condition. HP-G
    n. Identify tape tracking; determine the cause(s) and correct the condition. HP-G
    o. Identify low gloss condition; determine the cause(s) and correct the condition. HP-G
    p. Identify poor adhesion; determine the cause(s) and correct the condition. HP-G
    q. Identify paint cracking (crowsfeet or line-checking, micro-checking, etc.); determine the cause(s) and correct the condition. HP-G

r. Identify corrosion; determine the cause(s) and correct the condition. HP-G
s. Identify dirt or dust in the paint surface; determine the cause(s) and correct the condition. HP-I
t. Identify water spotting; determine the cause(s) and correct the condition. HP-G
u. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition. HP-G
v. Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition. HP-G
w. Identify die-back conditions (dulling of the paint film showing haziness); determine the cause(s) and correct the condition. HP-G
x. Identify chalking (oxidation); determine the cause(s) and correct the condition. HP-G
y. Identify bleed-through (staining); determine the cause(s) and correct the condition. HP-G
z. Identify pin-holing; determine the cause(s) and correct the condition. HP-G
aa. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. HP-G
bb. Identify pigment flotation (color change through film build); determine the cause(s) and correct the condition. HP-G
cc. Measure mil thickness. HP-I

9. Measure paint mil thickness
    a. Apply decals, transfers, tapes, woodgrains, pinstripes (painted and taped), etc. HP-G
    b. Buff and polish finish to remove defects as required. HP-I
    c. Clean interior, exterior, and glass. HP-I
    d. Clean body openings (door jambs and edges, etc.). HP-I
    e. Remove overspray. HP-I

## Course Content:

A. Personal Protective Equipment
B. Shop Operations/OSHA Guidelines
C. Paint Coatings
D. Corrosion Resistant Coatings
E. Spray Gun Operation and Cleaning
F. Painting and Substrate Materials
G. Paint Defects
H. Paint Mil
I. Final Detail Procedures for Projects

## Learning Assessments:

Assessments may include quizzes, tests, project work, demonstrated competence, instructor observation, weekly assignments and/or written papers.

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## Instructional Materials:

*Textbook: Duffy, J.E. (2015). Auto Body Repair Technology. (6th ed.).* Boston, MA: Cengage Learning. ISBN: 9781133702856.

*Textbook: Duffy, J.E. (2015). Tech Manuel for Duffy's Auto Body Repair Technology. (6th ed.).* Boston, MA: Cengage Learning. SBN: 9781133702863.

**Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition**

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the "Disabilities Self-Identification Form" on our Disability Services website.

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

**A Note on Harassment, Discrimination and Sexual Misconduct**

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an online report about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our Equity Grievance Policy.