# Scope & Sequence

|  |  |
| --- | --- |
| Course Name: Paint and Refinishing **TSDS PEIMS Code:** 13039900 | **Course Credit:** 2.0**Course Requirements:** Recommended Grade Placement: 10 – 12. **Prerequisites:** None.**Recommended Prerequisites:** Basic Collision Repair and Refinishing or Collision Repair. |
| **Course Description:** Paint and Refinishing includes knowledge of the processes, technologies, and materials used in the reconstruction of vehicles. This course is designed to teach the concepts and theory of systems related to automotive paint and refinishing. |
| **NOTE:** This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered. |
| **Total Number of Periods****Total Number of Minutes****Total Number of Hours** | 350 Periods15,750 Minutes262.50 Hours\* | \*Schedule calculations based on 175/180 calendar days. For 0.5 credit courses, schedule is calculated out of 88/90 days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc. |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***(assumes 45-minute periods)Total minutes per unit | **TEKS Covered****130.457. (c) Knowledge and skills** |
| **Unit 1: Professional Standards and Career Exploration**Students will identify employment and entrepreneurship opportunities in the area of automotive paint and refinishing. Students will be encouraged to discover and use resources available through CTSO or other extracurricular organization(s) to further develop leadership and employability skills. Students will discuss and demonstrate appropriate and effective communication, group participation, leadership, teamwork, and good citizenship in this and in all units as they develop personal and career goals and increase their interpersonal and employability skills. Students will explore and discuss industry certification opportunities and requirements as well as employers’ expectations, and include personally relevant information as they continue to develop their plans for future career opportunities. | 10 periods450 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of automotive paint and refinishing;(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation; and(D) identify employers' expectations and appropriate work habits.(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers. |
| **Unit 2: Health and Safety**Students will discuss and identify employers’ expectations regarding safe and appropriate work habits, ethical conduct and decision-making, and environmental regulations and responsibilities in paint and refinishing services. Students will participate as a class and/or in small groups to model, present, and participate in various workplace safety scenarios and situations where personal protective equipment must be worn and/or decisions regarding safety and/or ethics must be made. Students will also have opportunities to discuss safety and health hazards, OSHA guidelines and regulations, and other federal, state, and local regulations as well as learn and demonstrate proper compliance. Students will also observe and demonstrate proper handling and disposal of environmentally hazardous materials used in paint and refinishing services and use hand and power tools and other equipment according to industry safety standards. | 40 periods1,800 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(A) demonstrate awareness of workplace safety and environmental responsibilities in automotive paint and refinishing and understand the use of personal protective equipment;(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation;(D) identify employers' expectations and appropriate work habits;(E) review the competencies related to resources, information systems, and technology; and(F) apply reasoning skills to a variety of workplace situations in order to make ethical decisions.(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:(A) identify safety and personal health hazards according to Occupational Safety and Health Association (OSHA) guidelines and the "Right to Know Law";(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards;(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator;(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system;(E) select and use the proper personal safety equipment such as gloves, suits, hoods, and eye and ear protection;(F) use hand and power tools and equipment commonly employed in paint and refinishing technologies, according to industry safety standards; and(G) properly handle and dispose of environmentally hazardous materials used in paint and refinishing technologies. |
| **Unit 3: Academic and Technical Skills in Automotive Paint and Refinishing**Students will explore, discuss, and describe the function and application of tools, equipment, technologies, and materials used in painting and refinishing. Students will be given multiple opportunities to describe, demonstrate and apply relevant problem-solving, reading, writing, and mathematical skills in-context as they read and interpret service and repair information, technical bulletins, specifications, schematics, and parts catalogs from a variety of sources. Students will discuss and predict new and emerging painting and refinishing technologies and materials as well as what core academic skills will be necessary for a successful career in the fields of automotive collision repair and refinishing. As part of this discussion, students will review the competencies related to resources, information systems, and technology. | 30 periods1,350 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(E) review the competencies related to resources, information systems, and technology.(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers;(B) use technical writing skills to complete paint and refinishing orders and related paperwork;(C) locate, read, and interpret documents such as service and repair information,technical bulletins, specifications, schematics, and parts catalogs; and(D) demonstrate competencies required to use and interpret service repair bulletins.(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:(H) demonstrate knowledge of new and emerging paint and refinishing technologies. |
| **Unit 4: Tools, Equipment, and Materials**Students will continue to discuss and safely demonstrate the use of tools, equipment, and materials used in paint and refinishing systems and services. Students will be given multiple opportunities for “hands-on” presentations, discussions, and demonstrations of the proper ways to perform audits and inspections as well as multiple opportunities to identify types of vehicle construction materials, finishes, techniques, and defects. Students will discuss corrosion protection, different types of vehicle finishes and their associated refinish techniques, and the causes of paint and refinishing defects. Students will also learn and demonstrate precision measurements of paint and materials and the proper preparation, application, and refinishing with various paint products, decals, and adhesives as well as vehicle detailing. | 50 periods2,250 minutes | (3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:(A) demonstrate the basic types of refinishing procedures for the different types of vehicle body construction used in the auto refinishing industry;(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives; and(D) perform precision measurements of paint and materials.(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations;(B) inspect types of vehicle construction materials and associated refinishing methods;(C) identify different types of vehicle finishes and associated refinish techniques; (D) inspect, identify, and determine the cause of paint and refinishing defects;(E) discuss corrosion protection; and(F) demonstrate vehicle detailing. |
| **Unit 5: Surface Preparation and Refinishing**Students will be given multiple opportunities to practice and demonstrate the technical knowledge and skills required for proper surface preparation and planning for refinishing, cleaning of all appropriate areas, and the application of primer, sealers, and coatings in “hands-on” activities, demonstrations, presentations, and discussions. Students will perform these activities as well as identify the types of metal and plastic parts to be refinished and determine the materials needed and the preparation and refinishing procedures for these parts in simulated or actual work situations.  | 50 periods2,250 minutes | (6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing;(B) featheredge areas to be refinished;(C) apply suitable metal treatment or primer;(D) mask and protect other areas that will not be refinished;(E) mix primer, primer-surfacer, or primer-sealer;(F) identify a complimentary color or shade of undercoat to improve coverage;(G) apply primer onto surface of repaired area;(H) remove dust from area to be refinished, including cracks or moldings of adjacent areas;(I) clean area to be refinished using a final cleaning solution;(J) remove, with a tack rag, any dust or lint particles from the area to be refinished;(K) apply suitable sealer to the area being refinished;(L) apply stone chip resistant coating;(M) identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished and determine the materials needed and preparation and refinishing procedures; and(N) identify metal parts to be refinished and determine the materials needed and preparation and refinishing procedures. |
| **Unit 6: Spray Guns: Preparation and Procedures**Students will be given multiple opportunities to learn, practice, and demonstrate their technical knowledge, skills, and understanding of spray gun inspections, setup, tests, adjustments, and operational procedures in “hands-on” activities, presentations, discussions, and inspections in simulated or actual occupational task/work situations. Students will also be given multiple “hands-on” opportunities to demonstrate their understanding of spray gun components and related equipment. | 30 periods1,350 minutes | (7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source;(B) select spray gun setup, including fluid needle, nozzle, and cap, for product being applied;(C) test and adjust spray gun using fluid, air, and pattern control valves; and(D) demonstrate an understanding of the operation of pressure spray equipment. |
| **Unit 7: Mixing, Matching, and Applying Paint**Students will continue to be given multiple opportunities to demonstrate the safe and appropriate use of various tools, equipment, and procedures during “hands-on” activities, demonstrations, presentations, and discussions of the technical knowledge and skills required for paint mixing, matching, and application. Some or all of the opportunities will be given in simulated or actual occupational tasks and work situations. Students will also identify the materials, equipment, and preparation differences between petroleum and waterborne technologies and refinish appropriate plastic parts. | 50 periods2,250 minutes | (8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:(A) identify color code by manufacturer vehicle information label;(B) measure, shake, stir, reduce, catalyze/activate, and strain refinish materials;(C) apply finish using appropriate spray techniques, including gun arc, angle, distance, travel speed, and spray pattern overlap, for the finish being applied;(D) apply selected product on test or let-down panel and check for color match;(E) apply single stage topcoat;(F) apply basecoat and clearcoat for panel blending and panel refinishing;(G) apply basecoat and clearcoat for overall refinishing;(H) remove nibs or imperfections from basecoat;(I) refinish rigid or semi-rigid plastic parts;(J) refinish flexible plastic parts;(K) apply multi-stage coats for panel blending and overall refinishing;(L) identify and mix paint using a formula;(M) identify poor hiding colors and determine necessary action;(N) tint color using formula to achieve a blendable match;(O) identify alternative color formula to achieve a blendable match; and(P) identify the materials, equipment, and preparation differences between petroleum and waterborne technologies. |
| **Unit 8: Costs, Estimates, and Customer Service**Students will be given multiple opportunities to learn and demonstrate the competencies and procedures for determining parts and labor costs on paint and refinishing orders in simulated and/or actual workplace situations. Students will also identify and apply the preparation, technical writing, and mathematical skills necessary to complete paperwork associated with various customer service scenarios involving coworkers and management in paint and refinishing services. Students will identify employer expectations as well as demonstrate ethical decision-making and effective communication skills in these customer service scenarios.  | 40 periods1,800 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation;(D) identify employers' expectations and appropriate work habits;(E) review the competencies related to resources, information systems, and technology; and(F) apply reasoning skills to a variety of workplace situations in order to make ethical decisions.(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers.(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to: (C) estimate parts and labor costs on paint and refinishing orders. |
| **Unit 9: Final Steps, Detailing, and Inspections**Students will demonstrate and apply their painting and refinishing skills and technical knowledge in various simulated occupational tasks, workplace scenarios, and culminating activities that also demonstrate appropriate workplace safety and conduct. Culminating activities will include a demonstration of final detailing, a complete quality control checklist, inspection, and identification of any defects.  | 50 periods1,125 minutes | (5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations;(D) inspect, identify, and determine the cause of paint and refinishing defects; and(F) demonstrate vehicle detailing.(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:(A) apply decals, transfers, tapes, woodgrains, and pinstripes such as painted and taped;(B) sand, buff, and polish fresh or existing finish to remove defects as required;(C) clean vehicle interior, exterior, and glass;(D) clean body openings such as door jambs and edges;(E) remove overspray; and(F) complete quality control using a checklist. |