

Implementation date
Fall 2010

PROGRAM CONCENTRATION: Architecture, Construction,
Communications & Transportation
CAREER PATHWAY: Collision Repair
COURSE TITLE: Painting and Refinishing II
PREREQUISITE: Painting and Refinishing I

Course Description: Painting and Refinishing II is the second course in painting and refinishing strand of the collision repair pathway that will teach the student skills and knowledge that will help him or her obtain a career in the automotive refinish industry. The student will learn theory, as well as hands on application in a project based setting. This training will give successful completers basic skills and knowledge to obtain an entry level job in the automotive refinish field.

ACCT-PRII- 1. Paint Mixing, Matching, and Applying--- Students will be able to mix and apply refinish material according to the paint manufacturer's instructions. Students will also learn basic color theory and how to tint paint for the best possible match.

- a. Determine type and color of paint already on the vehicle by manufacturer's vehicle information label.
- b. Shake, stir, reduce, catalyze/activate, and strain paint
- c. Apply various refinish materials using appropriate spray techniques(gun arc, gun angle, gun distance, gun speed and spray pattern overlap) for the finish being applied.
- d. Apply selected product on a test and let down panels: check for color match.
- e. Apply single stage topcoat.
- f. Apply basecoat/clearcoat for panel blending or partial refinishing.
- g. Apply basecoat/clearcoat for overall refinishing.
- h. Refinish rigid and semi-rigid plastic parts.
- i. Apply multi stage coats for panel blending or overall refinishing.
- j. Identify and mix paint using a formula.
- k. Identify poor hiding colors; determine necessary action.
- l. Tint color using formula to achieve a blendable match.
- m. Identify alternative color formula to achieve a blendable match.

Academic Standard(s):

SEV4- Students will understand and describe availability, allocation and conservation of energy and other resources.

- c. Describe how energy and other resource utilization impact the

Implementation date

Fall 2010

environment and recognize that individuals as well as larger entities. (businesses, governments, etc.) have impact on energy efficiency.

- e. Describe the commonly used fuels (e.g. fossil fuels, nuclear fuels, etc.) and some alternative fuels(e.g. wind, solar, ethanol, etc.) including the required technology, availability, pollution problems, and implementation problems. Recognize the origin of fossil fuels and the problems associated with our dependence on this energy source.

SEV5- Students will recognize that humans are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

- c. Explain how human activities affect global and local sustainability.
- e. Describe the effects and potential implications of pollution and resource depletion on the environment at the local and global levels (e.g. air and water pollution, solid waste disposal, depletion of the Stratospheric ozone, global warming, and land uses).
- f. Describe how political, legal, social, and economic decisions may affect global and local ecosystems.

SCSH4- Students will use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

- a. Develop and use systematic procedures for recording and organizing information.
- b. Use technology to produce tables and graphs.
- c. Use technology to develop, test, and revise experimental or mathematical models.

SCSH2- Students will use standard safety practices for all classroom, laboratory and field investigations.

- c. Follow correct protocol for identifying and reporting safety problems and violations.

SCSH3- Students will identify and investigate problems scientifically.

- a. Suggest reasonable hypotheses for identified problems.
- b. Develop procedures for solving scientific problems.
- c. Collect organize and record appropriate data.
- e. Develop reasonable conclusions based on data collected.
- f. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

SC5- Students will understand that the rate at which a chemical reaction occurs can be affected by changing concentration, temperature, or pressure and the addition of a catalyst.

- a. Demonstrate the effects of changing concentration, temperature, and pressure on chemical reactions.

Implementation date

Fall 2010

- b. Investigate the effects of a catalyst on chemical reactions and apply it to everyday examples.

SPS9- Students will investigate the properties of waves.

- a. Recognize that all waves transfer energy.
- d. Investigate the phenomena of reflection, refraction, interference, and diffraction.

MM3P1- Students will solve problems (using appropriate technology)

- a. Build new mathematical knowledge through problem solving.
- b. Solve problems that arise in mathematics and in other contexts.
- c. Apply and adapt a variety of appropriate strategies to solve problems.

MM3P3- Students will communicate mathematically.

- a. Organize and consolidate their mathematical thinking through communication.
- b. Communicate their mathematical thinking coherently and clearly to peers, teachers and others.

MM3P4- Students will make connections among mathematical ideas and to other disciplines.

- c. Recognize and apply mathematics in contexts outside of mathematics.

National Academic Standards (NATEF)

SC012- Analyzes / evaluates environmental issues such as waste management.

SC042- Applies and uses maps, charts, tables, and graphs.

SC044- Applies and uses the scientific method.

SC114- Describes and explains chemical reactions.

SC116- Describes chemical reactions with a catalyst.

SC121- Describes chemical reactions with an inhibitor.

SC321- Describes and explains light angle of incidence and reflection.

SC329- Describes and explains light (opaque).

SC335- Describes and explains light (translucent & transparent).

SC443- Explain relative humidity.

SC497- Measures volume of liquids and solids.

SC499- Uses computers for processing and estimating information.

SC512- Describes and explains how contamination affects chemical reactions.

SC522- Applies and uses ratio and proportion mixtures.

SC531- Describes and explains viscosity.

SC532- Describe and explain light sources.

MA028- Computes addition mentally.

MA126- Converts units from English to metric and metric to English.

MA161- Identifies English measurement: length / volume / weight.

MA171- Identifies Metric measurement: length / volume / weight.

MA182- Measures direct temperature.

MA184- Measures direct volume.

MA229- Solves problems. Generates conclusions. Demonstrates deductive

Implementation date

Fall 2010

Reasoning.

ACCT-PRII-2. Paint Defects- Causes and Cures--- Students will be able to identify, determine the cause and correct the condition of many common paint defects.

- a. Identify blistering; determine the cause(s) and correct the condition.
- b. Identify blushing; determine the cause(s) and correct the condition.
- c. Identify a dry spray appearance in the paint surface; determine the cause(s) and correct the condition.
- d. Identify the presence of fish eyes in the finish; determine the cause(s) and correct the condition.
- e. Identify lifting; determine the cause(s) and correct the condition.
- f. Identify clouding; determine the cause(s) and correct the condition.
- g. Identify orange peel; determine the cause(s) and correct the condition.
- h. Identify overspray; determine the cause(s) and correct the condition.
- i. Identify solvent popping in a freshly painted surface; determine the cause(s) and correct the condition.
- j. Identify sags and runs in a paint surface; determine the cause(s) and correct the condition.
- k. Identify sanding marks; determine the cause(s) and correct the condition.
- l. Identify color difference; determine the cause(s) and correct the condition.
- m. Identify tape tracking; determine the cause(s) and correct the condition.
- n. Identify low gloss condition; determine the cause(s) and correct the condition.
- o. Identify poor adhesion; determine the cause(s) and correct the condition.
- p. Identify paint cracking; determine the cause(s) and correct the condition.
- q. Identify corrosion; determine the cause(s) and correct the condition.
- r. Identify dirt or dust in the paint surface; determine the cause(s) and correct the condition.
- s. Identify water spotting; determine the cause(s) and correct the condition.
- t. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition.
- u. Identify die-back conditions; determine the cause(s) and correct the condition.
- v. Identify chalking; determine the cause(s) and correct the condition.
- w. Identify bleed through; determine the cause(s) and correct the condition.
- x. Identify pin holing; determine the cause(s) and correct the condition.
- y. Identify buffing related imperfections; correct the problem.
- z. Identify pigment flotation; determine the cause(s) and correct the condition.
- aa. Measure mill thickness.

Academic Standard(s)

SCSH2- Students will use standard safety practices for all classroom, laboratory and field investigations.

Implementation date

Fall 2010

- c. Follow correct protocol for identifying and reporting safety problems and violations.

SCSH3- Students will identify and investigate problems scientifically.

- a. Suggest reasonable hypotheses for identified problems.
- b. Develop procedures for solving scientific problems.
- c. Collect organize and record appropriate data.
- e. Develop reasonable conclusions based on data collected.
- f. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

National Academic Standards (NATEF)

SC044- Applies and uses the scientific method.

SC052- Converts measurement units from English to Metric.

SC489- Measures distance and length.

ACCT-PRII-3. Final Detail--- Students will be able to final detail a vehicle that will be returned to a customer. The student will be able to select the proper tools and chemicals needed to perform final detailing.

- a. Apply decals, transfers, tapes, woodgrains, pinstripes, etc.
- b. Buff and polish finish to remove defects as required.
- c. Clean exterior, interior and glass.
- d. Clean body openings (door jambs and edges).
- e. Remove overspray.

Academic Standard(s)

SCSH2- Students will use standard safety practices for all classroom, laboratory and field investigations.

- c. Follow correct protocol for identifying and reporting safety problems and violations

SCSH3- Students will identify and investigate problems scientifically.

- a. Suggest reasonable hypotheses for identified problems.
- b. Develop procedures for solving scientific problems.
- c. Collect organize and record appropriate data.
- e. Develop reasonable conclusions based on data collected.
- f. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

MM3P1- Students will solve problems (using appropriate technology)

Implementation date

Fall 2010

- a. Build new mathematical knowledge through problem solving.
- d. Solve problems that arise in mathematics and in other contexts.
- e. Apply and adapt a variety of appropriate strategies to solve problems.

MM3P3- Students will communicate mathematically.

- a. Organize and consolidate their mathematical thinking through communication.
- b. Communicate their mathematical thinking coherently and clearly to peers, teachers and others.

MM3P4- Students will make connections among mathematical ideas and to other disciplines.

- b. Recognize and apply mathematics in contexts outside of mathematics.

National Academic Standards (NATEF)

SC044- Applies and uses the scientific method.

SC052- Converts measurement units from English to Metric.

SC489- Measures distance and length.

MA028- Computes addition mentally.

MA126- Converts units from English to metric and metric to English.

MA161- Identifies English measurement: length / volume / weight.

MA171- Identifies Metric measurement: length / volume / weight.

MA184- Measures direct volume.

MA229- Solves problems. Generates conclusions. Demonstrates deductive Reasoning.

Reading Across the Curriculum

Reading Standard Comment

After the elementary years, students engage in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas in context.

Beginning with the middle grades years, students begin to self-select reading materials based on personal interests established through classroom learning.

Implementation date

Fall 2010

Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

Students will enhance reading in all curriculum areas by:

- a. Reading in all curriculum areas
 - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
 - Read both informational and fictional texts in a variety of genres and modes of discourse.
 - Read technical texts related to various subject areas.
- b. Discussing books
 - Discuss messages and themes from books in all subject areas.
 - Respond to a variety of texts in multiple modes of discourse.
 - Relate messages and themes from one subject area to messages and themes in another area.
 - Evaluate the merit of texts in every subject discipline.
 - Examine author's purpose in writing.
 - Recognize the features of disciplinary texts.
- c. Building vocabulary knowledge
 - Demonstrate an understanding of contextual vocabulary in various subjects.
 - Use content vocabulary in writing and speaking.
 - Explore understanding of new words found in subject area texts.
- d. Establishing context
 - Explore life experiences related to subject area content.
 - Discuss in both writing and speaking how certain words are subject area related.
 - Determine strategies for finding content and contextual meaning for unknown words.

CTAE Foundation Skills

Implementation date
Fall 2010

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

Implementation date

Fall 2010

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.