TN Department of Education | College, Career and Technical Education

Collision Repair: Damage Analysis, Estimating, and Customer Service

Primary Career Cluster:	Transportation, Distribution, & Logistics
Consultant:	Greg Francescon, (615) 532-2835, Gregory.Francescon@tn.gov
Course Code(s):	6149
Prerequisite(s):	*Collision Repair: Non-Sructural* (6062) and/or *Collision Repair: Painting & Refinishing* (6063)
Credit:	1
Grade Level:	12
Graduation Requirements:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Transportation, Distribution, & Logistics courses.
Programs of Study and Sequence:	This course is the fourth and final course in the *Automotive Collision Repair* program of study.
Aligned Student Organization(s):	SkillsUSA: http://tnskillsusa.com/ Tracy Whitehead, (615) 532-2804, Tracy.Whitehead@tn.gov
Coordinating Work-Based Learning:	Teachers who hold an active WBL certificate may offer placement for credit when the requirements of the state board's WBL Framework and the Department's WBL Policy Guide are met. For information, visit https://tn.gov/education/topic/work-based-learning.
Available Student Industry Certifications:	Automotive Service Excellence (ASE) Student Certification: http://www.asestudentcertification.com/
Dual Credit or Dual Enrollment Opportunities:	Students who obtain the ASE student certification may be able to articulate hours at Tennessee Colleges of Applied Technology.
Teacher Endorsement(s):	507, 771
Additional Required Teacher Certifications/Training:	ASE B-3 Industry Certification
Teacher Resources:	http://www.tn.gov/education/cte/TransportationDistributionLogistics.shtml

Course Description

Collision Repair: Damage Analysis, Estimating, and Customer Service is the capstone course in the *Automotive Collision Repair* program of study. It is intended to prepare students for careers in the automotive repair industry. Upon completion of this course, a proficient student proficient will be able to assess collision damage, estimate repair costs, and work with vehicle owners in a professional setting. Utilizing problem-solving strategies and resources developed in this course,

including original equipment manufacturer (OEM) manuals, electronic data, and photo analysis of damaged vehicles, students will be prepared to generate work orders in a variety of collision damage situations. Students completing the *Automotive Collision Repair* program of study will be eligible to take the examination for Automotive Student Excellence (ASE) Student Certification in Collision. Some tasks are assigned a "High Priority (HP)" designation. Accredited programs must include at least 95% of the HP-I (Individual) tasks and 90% of the HP-G (Group) tasks in the curriculum.

Work-Based Learning Framework

Hands-on Experience** activities may take the form of work-based learning (WBL) opportunities (such as internships, cooperative education, service learning, and job shadowing) or industry-driven project-based learning. These experiences must comply with the Work-Based Learning Framework guidelines established in SBE High School Policy 2.103. As such, this course must be taught by a teacher with an active WBL Certificate issued by the Tennessee Department of Education and follow policies outlined in the Work-Based Learning Policy Guide available online at https://tn.gov/education/topic/work-based-learning. The Tennessee Department of Education provides a Personalized Learning Plan template to ensure compliance with the Work-Based Learning Framework, state and federal Child Labor Law, and Tennessee Department of Education policies, which must be used for students participating in WBL opportunities.

Program of Study Application

This is the final course in the *Automotive Collision Repair* program of study. For more information on the benefits and requirements of implementing this program in full, please visit the Transportation, Distribution, & Logistics website at: http://www.tn.gov/education/cte/TransportationDistributionLogistics.shtml.

Course Standards

Safety

For every task in *Collision Repair: Damage Analysis, Estimating, and Customer Service*, the following safety requirement must be strictly enforced**:**

1) Comply with personal and environmental safety practices associated with clothing and the use of gloves; respiratory protection; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.
    a. Use and inspect personal protective equipment every time equipment is used.
    b. Inspect, maintain, and employ safe operating procedures with tools and equipment, such as hand and power tools, ladders, scaffolding, and lifting equipment.
    c. Assume responsibilities under HazCom (Hazard Communication) regulations.
    d. Adhere to responsibilities, regulations, and Occupational Safety & Health Administration (OSHA) policies regarding reporting of accidents and observed hazards, and regarding emergency response procedures.

e. Maintain a portfolio record of written safety examinations and equipment examination for which the student has passed an operational checkout by the instructor.
f. Utilize MSDSs (material safety data sheets), and identify the health hazards associated with hazardous material.

Damage Analysis

2) Gather information from a variety of print and digital sources (such as OEM manuals and online instructional materials) as well as firsthand experiences observing a qualified technician on preparing a vehicle for damage analysis. Create a flow chart that will show the entire process of analyzing damage and estimating costs. Write an accompanying text that describes how key steps are accomplished, that is, what the technician should do and observe at each step. Steps include but are not limited to the following. (Note: items marked HP-I should be demonstrated by the student.)
    a. Position the vehicle for inspection. HP-G
    b. Prepare vehicle for inspection by providing access to damaged areas. HP-G
    c. Analyze damage to determine appropriate methods for overall repairs. HP-I
    d. Determine the direction, point(s) of impact, and extent of direct, indirect, and inertia damage. HP-G
    e. Gather details of the incident/accident necessary to determine the full extent of vehicle damage. HP-G
    f. Identify and record pre-existing damage. HP-I
    g. Identify and record prior repairs. HP-G

3) Accurately complete a summary of damages on a claim form, citing specific evidence to support the need for components, parts, and labor necessary to repair the vehicle. Formulate a list of needed parts necessary to repair the vehicle to OEM standards. Continue the flow chart begun in Standard 2 to identify suspension, electrical, and mechanical elements as well as interior damage.
    a. Perform visual inspection of structural components and members. HP-G
    b. Identify structural damage using measuring tools and equipment. HP-I
    c. Perform visual inspection of non-structural components and members. HP-I
    d. Determine parts, components, material type(s) and procedures necessary for a proper repair. HP-I
    e. Identify type and condition of finish; determine if refinishing is required. HP-I
    g. Identify suspension, electrical, and mechanical component physical damage. HP-G
    h. Identify safety systems physical damage. HP-G
    i. Identify interior component damage. HP-I
    j. Identify damage to add-on accessories and modifications. HP-G
    k. Identify single (one time) use components. HP-G

Damage Estimating

4) Compile evidence from the vehicle and owner/operator, including pictures and written summaries, to ascertain damage, determine make and model, and identify VIN information necessary to determine appropriate OEM parts.
    a. Determine and record customer/vehicle owner information. HP-I

b. Identify and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant. HP-I
c. Identify and record vehicle options, including trim level, paint code, transmission, accessories, and modifications. HP-I
d. Identify safety systems; determine replacement items. HP-G
e. Apply appropriate estimating and parts nomenclature (terminology). HP-I
f. Determine and apply appropriate estimating sequence. HP-I
g. Utilize estimating guide procedure pages. HP-I

5) Using the created flow chart, the narratives, and photo analysis, ascertain whether parts will be aftermarket, recyclable, rebuilt, or reconditioned. Based on the information gathered, develop a cost analysis of parts and labor value for each operation required. Determine the extent of direct and indirect damage and direction of impact; develop and document a repair plan that includes summary of damage, recommended repairs, costs of parts and labor, and necessary finishing. Review, edit, and revise plan based on peer and instructor feedback
    a. Apply estimating guide footnotes and headnotes as needed. HP-I
    b. Estimate labor value for operations requiring judgment. HP-G
    c. Select appropriate labor value for each operation (structural, non-structural, mechanical, and refinish). HP-I
    d. Select and price OEM parts; verify availability, compatibility, and condition. HP-G
    e. Select and price alternative/optional OEM parts; verify availability, compatibility and condition. HP-G
    f. Select and price aftermarket parts; verify availability, compatibility, and condition. HP-G
    g. Select and price recyclable/used parts; verify availability, compatibility and condition. HP-G
    h. Select and price remanufactured, rebuilt, and reconditioned parts; verify availability, compatibility and condition. HP-G
    i. Determine price and source of necessary sublet operations. HP-G
    j. Determine labor value, prices, charges, allowances, or fees for non-included operations and miscellaneous items. HP-G

6) Consult print and digital resources, such as invoicing templates and OEM parts manuals, to prepare written work orders for documentation of a collision repair service. Synthesize information about the number and cost of parts, and detail the extent of the services involved. Apply quantitative math skills to develop an accurate cost analysis; then compile the work order using a manual template or word processing software.
    a. Recognize and apply overlap deductions, included operations, and additions. HP-I
    b. Determine additional material and charges. HP-G
    c. Determine refinishing material and charges. HP-I
    d. Apply math skills to establish charges and totals. HP-I
    e. Interpret computer-assisted and manually written estimates; verify the information is current. HP-I
    f. Identify procedural differences between computer-assisted systems and manually written estimates. HP-G

g. Identify procedures to restore corrosion protection; establish labor values and material charges. HP-G
h. Determine the cost effectiveness of the repair and determine the approximate vehicle retail and repair value. HP-G
i. Recognize the differences in estimation procedures when using different information provider systems. HP-G
j. Verify accuracy of estimate compared to the actual repair and replacement operations. HP-G

Vehicle Construction and Parts Identification

7) Consult OEM parts manuals and electronic data to determine cost of components and accessories for various makes and models of vehicles. Write explanatory narratives that examine and define the various components, establish the repairability of those components, and integrate the information accurately into the work order.
    a. Identify type of vehicle construction (space frame, unibody, body-over-frame). HP-G
    b. Recognize the different damage characteristics of space frame, unibody, and body-over-frame vehicles. HP-G
    c. Identify impact energy absorbing components. HP-G
    d. Identify steel types; determine repairability. HP-G
    e. Identify aluminum/magnesium components; determine repairability. HP-G
    f. Identify plastic/composite components; determine repairability. HP-G
    g. Identify vehicle glass components and repair/replacement procedures. HP-G
    h. Identify add-on accessories. HP-G

Customer Relations and Sales Skills

8) Interact respectfully with individuals involved in various aspects of customer service, including OEM representatives, customers/clients, insurance representatives, and suppliers. Resolve conflicts and differences to maintain a smooth workflow. Individually craft written scenarios narrating a challenging customer interaction and use the scenarios to practice effective communication techniques in a role-play. Research negotiation skills and apply them to workplace scenarios.
    a. Acknowledge and/or greet customer/client. HP-I
    b. Listen to customer/client; collect information and identify customer’s/client's concerns, needs, and expectations. HP-I
    c. Establish cooperative attitude with customer/client. HP-I
    d. Identify yourself to customer/client; offer assistance. HP-I
    e. Deal with angry customer/client. HP-I
    f. Identify customer/client preferred communication method; follow up to keep customer/client informed about parts and the repair process. HP-G
    g. Recognize basic claims handling procedures; explain to customer/client. HP-G
    h. Project positive attitude and professional appearance. HP-I
    i. Provide and review warranty information. HP-I
    j. Provide and review technical and consumer protection information. HP-G
    k. Estimate and explain duration of out-of-service time. HP-G
    l. Apply negotiation skills to obtain a mutual agreement. HP-G
    m. Interpret and explain manual or computer-assisted estimate to customer/client. HP-I

Hands-on Experience**

Option I: Internship

9) Participate in a work-based learning internship at a licensed collision repair business to develop, practice, and demonstrate skills outlined in standards above. Internship should follow current Tennessee work-based learning guidelines and/or AYES internship guidelines as appropriate.

10) Create and continually update a personal journal to document internship activities. Draw connections between the experience and course content, thoughtfully reflecting on:
    a. Acquired leadership skills
    b. Problem-solving techniques and decision-making skills
    c. Team member participation in a learning environment
    d. Personal career development
    e. Opportunities for industry certifications

11) Upon conclusion of the internship, write an informational essay summarizing the internship experience and next steps for personal and professional growth. Produce a technology-enhanced class presentation showcasing highlights, challenges, and lessons learned from the internship.

Option II: Portfolio

12) Create a portfolio, or similar collection of work, offering evidence to illustrate mastery of skills and knowledge as outlined in the standards above. The portfolio should reflect thoughtful assessment and evaluation of the student's progression of work involving the estimation of damage to a vehicle and adherence to Materials Safety Data Sheets (MSDS). The following documents will reside in the student's electronic career portfolio:
    a. Personal code of professional ethics
    b. Career and professional growth plan
    c. List of responsibilities undertaken throughout the course
    d. Examples of visual materials developed and used during the course (such as graphics, presentation slides, videos, demonstrations)
    e. Description of technology used, with examples if appropriate
    f. Periodic journal entries reflecting on tasks and activities
    g. Feedback from instructor based on observations

** Although a hands-on experience in work-based learning (WBL) is the most ideal, it is recognized that not all students will be able to be placed in a working collision establishment. While the WBL experience is encouraged, the portfolio option can be used in place of, or to supplement, an internship experience.

Standards Alignment Notes

*References to other standards include:

- National Automotive Technicians Education Foundation (NATEF) standards for Damage Analysis, Estimating and Customer Service (pages 78-81).
- P21: Partnership for 21st Century Skills Framework for 21st Century Learning
    - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.