Course Number: [Course Number]
Instructor: Jeff Owen
OCAS Code: [OCAS Code]
Phone Number: 580.327.0344
Course Length: 75 hours
Email: jowen@nwtech.edu
Career Cluster: Transportation, Distribution, & Logistics
Campus: Alva
Career Pathway: Automotive Collision Repair
Program: Collision Technology
Career Major: Combination Collision Repair Technician
Pre-requisite: None
Course Description: Within this course the students will learn to inspect a damaged vehicle and correctly identify all damage. This damage analysis will cover the entire vehicle from minor to major damage with structural misalignment. This course will cover the different types of vehicle construction found on the road today, such as uni-body, full body-over-frame frame and the hybrid frame/semi-unibody. Students will learn to look for indicators of damage and how collision energy is managed and travels through a vehicle during a collision. Some of the measuring equipment that will be covered is the centerline gauge, tram bar, universal measuring system and computer measuring systems. Measuring of the vehicle structure will be covered with the students learning to set-up and analyze the measurements to determine damage. The students will learn to look at damage in 3-Dimension, which are length, width and height.
Instructional Philosophy: The instructor will provide not only technical training in the Auto Collision Technology area but also soft-skills training in an effort to provide training and services needed for students to succeed in the workplace.
Course Goals: Upon successful completion of this course, the student will be able to:

- Review damage report and analyze damage to determine appropriate methods for overall repair; develop repair plan.
- Inspect, remove, store, and replace exterior trim and moldings.
- Inspect, remove, store, and replace interior trim and components.
- Inspect, remove, store, and replace non-structural body panels and components that may interfere with or be damaged during repair.
- Inspect, remove, store, and replace all vehicle mechanical and electrical components that may interfere with or be damaged during repair.
- Protect panels, glass, and parts adjacent to repair area.
- Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants from those areas to be repaired.
- Remove corrosion protection, undercoatings, sealers, and other protective coatings necessary to perform repairs.
- Inspect, remove, and replace repairable plastics and other components that are recommended for off-vehicle repair.
- Apply safety procedures associated with vehicle components and systems such as ABS, air bags, refrigerants, batteries, tires, oil, anti-freeze, engine coolants, etc.
- Apply environmental practices associated with vehicle components and systems such as substrates, fluids, refrigerants, batteries, etc.
- Diagnose and measure structural damage using tram and self-centering gauges according to industry specifications.
• Attach frame anchoring devices.
• Straighten and align mash (collapse) damage.
• Straighten and align sag damage.
• Straighten and align sidesway damage.
• Straighten and align twist damage.
• Straighten and align diamond frame damage.
• Remove and replace damaged frame horns, side rails, and cross members according to manufacturer's specifications/procedures.
• Restore corrosion protection to repaired or replaced frame areas.
• Repair or replace weakened or cracked frame members in accordance with vehicle manufacturer's specifications/procedures.
• Identify misaligned or damaged steering, suspension, and powertrain components that can cause vibration, steering, and wheel alignment problems; align or replace in accordance with vehicle manufacturer's specifications/procedures.
• Identify heat limitations in frame repair.
• Identify misaligned or damaged steering, suspension, and powertrain components that can cause vibration, steering, and 4-wheel alignment problems; realign or replace in accordance with vehicle manufacturer's specifications/procedures.
• Diagnose and analyze unibody vehicle dimensions using a tram gauge.
• Determine and inspect the locations of all suspension, steering, and powertrain component attaching points on the body.
• Diagnose and measure unibody vehicles using a dedicated (fixture) measuring system.
• Diagnose and measure unibody vehicles using a universal measuring system (mechanical, electronic, laser).
• Determine the extent of the direct and indirect damage and the direction of impact; plan the methods and sequence of repair.
• Attach body anchoring devices; remove or reposition components as necessary.
• Straighten and align cowl assembly.
• Straighten and align roof rails/headers and roof panels.
• Straighten and align hinge and lock pillars.
• Straighten and align body openings, floor pans, and rocker panels.
• Straighten and align quarter panels, wheelhouse assemblies, and rear body sections (including rails and suspension/powertrain mounting points).
• Straighten and align front-end sections (aprons, strut towers, upper and lower rails, steering, and suspension/power train mounting points, etc.).
• Use proper heat stress relief methods in high strength steel in accordance with manufacturer specifications/procedures.
• Use proper cold stress relief methods.
• Remove creases and dents using power tools and hand tools to restore damaged areas to proper contours and dimensions.
• Determine the extent of damage to structural steel body panels; repair or replace.
• Remove and replace damaged sections of structural steel body panels in accordance with manufacturer's specifications/procedures.
• Restore corrosion protection to repaired or replaced unibody structural areas.
Major Course Projects: Students are allowed to work on their own projects as well as live-work projects as approved by instructor.

Students will compile a portfolio which includes classroom theory and activities as well as a summary of hands-on work in the shop. Students will include photographs of projects and live work projects with descriptions for each photo.

Project Outline: Students may begin working on projects as their skill level allows. All projects must be completed by the first of May. These projects will reinforce classroom theory instruction and will require the student to consult industry service information during the course of task performance.

Instructional Delivery Plan: The instruction for this course will utilize various methods in an effort to promote and accommodate different learning styles including classroom lecture, classroom demonstrations, shop demonstrations, hands-on learning activities, classroom discussion, interactive media, textbook, computer based learning activities, research projects, guest speakers, and student presentations. Students will be required to work independently as well as in teams. Assignments will require students to use academic skills in math, science, and language arts.

Assessment Plan: Pass Safety Test with 100% accuracy.

Assessment Plan:
50% Performance of technical skills
45% Tests and written assignments
5% Academic Career Center (ACC)

Grading Scale:
A 90-100 Exceeds expectations
B 80-89 Meets industry standards and expectations
C 70-79 Passing grade, but does not meet some standards
D 60-69 Passing, but only meets the minimum standards
F Below 60 Failing, does not meet minimum standards

Alliance Credit Offered: OSU-IT

Industry Alignments: ICAR

End of Instruction Industry Assessment: Students will have to pass Safety Test at 100% accuracy and demonstrate safety practices.

http://www.okcareertech.org/testing/Skills_Standards/TransportationCareer_Cluster.htm

Auto Body: Non-Structural Analysis & Damage Repair Technician - CTTC
http://www.okcareertech.org/testing/PDF_Docs/FY08pdf/32002_NonStructAnalysisRepairTech.pdf

Auto Body: Painting & Refinishing Technician - CTTC
http://www.okcareertech.org/testing/PDF_Docs/FY08pdf/32005_PaintRefinshTech.pdf

ASE: Collision Repair and Refinish Series – Painting and Refinishing
ASE: Collision Repair and Refinish Series – Non-Structural Analysis and Damage Repair
ASE: Collision Repair and Refinish Series – Structural Analysis and Damage Repair
ASE: Collision Repair and Refinish Series – Mechanical and Electrical Components
ASE: Collision Repair and Refinish Series – Damage and Analysis Estimating

NOCTI: Collision Repair Technology -
http://www.nocti.org/PDFs/JobReady/3006_Collision_Repair.pdf

NOCTI: Collision Repair and Refinishing Technology -

Resources: I-CAR Worker Protection Curriculum
SP/2 – http://www.sp2.org
Transportation, Distribution, & Logistics Career Cluster Resources -
http://www.careerclusters.org/resources/ClusterDocuments/tlddocuments/TDLFinal.pdf

Attachments: Student curriculum is available at www.nwtech.edu/owen/