

## **COURSE OUTLINE**

### **Structural Analysis and Damage Repair II - Unibody**

#### **Course Description**

AB 234. Structural Analysis and Damage Repair II - Unibody. 3 hours credit.  
Prerequisites: AB 124 with a C or better. This course will enable the student to diagnose damage, measure and repair structured components, using welding applications as needed. The student will learn to replace fixed glass as well as straighten and align structural components to manufacturer's specifications while using safety practices.

#### **Course Relevance**

The principles learned in this course will allow the student to perform the essential tasks of analyzing, preparing, and then performing damage repair and adjustments. These tasks are essential to those aspiring to work in the auto body repair profession. This course and subsequent courses will be taught according to NATEF (National Automotive Technicians Education Foundation)/ASE (Automotive Service Excellence) standards.

#### **Required Materials**

Duffey, J., (2004). *Auto body repair technology* (4<sup>th</sup> ed.). Albany, NY: Delmar Publishing

#### **Learning Outcomes**

The intention is for the student to be able to

1. Diagnose damage
2. Plan and execute collision repair procedures
3. Operate different types of straightening equipment
4. Follow proper procedures for replacing fixed glass
5. Apply personal and environmental safety practices

#### **Primary Learning PACT Skills that will be DEVELOPED and/or documented in this course**

Through the student's involvement in this course, he/she will develop his/her ability in the following primary PACT skill areas:

1. Field-Related Technology
  - Through "in shop" exercises, the student will be able to demonstrate his/her understanding of analyzing, preparing, and repairing outer body panels

Secondary skills (developed but not documented):

Health Management  
Reading

## Major Summative Assessment Tasks

These learning outcomes and primary Learning PACT skills will be demonstrated by:

1. Repairing upper body structural components to factory specifications for fixed glass installation applying personal and environmental safety practices

## Course Content

- I. Themes - Key recurring concepts that run throughout this course:
  - A. Safety
  - B. Quality
- II. Issues - areas of conflict that must be understood in order to achieve the intended outcome:
  - A. Determining whether to repair or replace
  - B. Repair damaged area without damaging the surrounding area
  - C. Misplacing removed parts
- III. Concepts – Key concepts that must be understood to address the issues:
  - A. Assessment regarding whether the damaged part can be repaired
  - B. Proper precision of repairing damage area without damaging the surrounding area
  - C. Proper storage of removed parts
- IV. Skills/Competencies - Actions that are essential to achieve the course outcomes:
  - A. Diagnose and measure unibody damage using tram and self-centering gauges according to industry specifications. High Priority-1 (HP-1)
  - B. Determine the extent of the direct and indirect damage in the directions of impact; document the methods and sequence of repair (HP-1)
  - C. Attach anchoring devices to vehicle; remove or reposition components as necessary (HP-1)
  - D. Repair damage using power tools and hand tools to restore proper contours and dimensions (HP-1)
  - E. Remove and replace damaged sections of structural steel body panels in accordance with manufacture's specifications/procedures (HP-1)
  - F. Restore corrosion protect to repaired or replaced unibody structural areas (HP-1)

## Learning Units

- I. Inspect and determine extent of unibody structural damage
  - A. Demonstrate use of tram bar
  - B. Demonstrate use of self center gauges
  - C. Demonstrate use of electronic measuring equipment
- II. Inspect steering, suspension, and drive train for damage
- III. Demonstrate proper techniques and safety procedures for removing and installing fixed glass

**Learning Activities**

Learning activities will include lectures, demonstration, and performance. Classroom lecture is designed to enable the students to understand the key principles of non-structural analysis and damage repair.

**Grade Determination**

The student will be graded on completion of assessment tasks (learning activities), and written examination.