



ACR 125
Unibody Structural Panel Repair and Replacement
MASTER COURSE SYLLABUS

****Instructors will provide students with additional course-specific information, including attendance/makeup policies, assignment/test scheduling, and instructor contact information, as necessary and appropriate.****

Prerequisite(s): ACR 122, ACR 124

Corequisite(s):

Quarter(s) Offered: Summer and Winter

Class Hours: 1

Lab Hours: 5

Credit Hours: 3

Course Description: Provides instruction in attachment methods, proper repair and replacement of structural panels, dimensional control, areas of high stress concentration, sectional principles, and crush zones. Selection and preparation of recycled parts will be emphasized. Topics include: Primary structure, Rear cross member, Apron and rails, Trans X member, Rocker, w/s posts, hinge pillar, center pillar, Floor pan, Spot weld removal, Panel sectional cuts, and damaged panel removal and replacement.

Student Learning Outcomes: Upon successful completion of this course, the student should be able to:

PRIMARY STRUCTURE

- Identify components on review and quiz sheet.

REAR CROSS MEMBER

- Locate components of high strength low alloy steel on illustration chart.
- Explain repair or replacement procedures for HSLA structural parts. Remove damaged components and properly align and replace using preferred methods according to manufacturers' specifications and recommendations if necessary.
- Restore corrosion protection.

APRON AND RAILS

- Analyze damage to determine whether to repair or replace damaged sections.

- Identify and demonstrate a knowledge of "risk" zones.
- Determine if rails are closed section or open "hat" channel. Explain replacement procedure for each.
- Explain procedure for removing high strength steel panels when replacement is necessary.
- Demonstrate a knowledge of stress relieving secondary damage in adjacent panels.
- Demonstrate proper method and equipment when removing spot welds and seams on damaged panels.
- Remove damaged panels, measure and align replacement panels using necessary equipment, properly weld replacement panels using manufacturers' recommended procedures properly and safely.
- Restore corrosion protection.

TRANS X MEMBER

- Demonstrate a knowledge of X member by explaining repair or replacement using manufacturers' recommended procedures.
- Repair or replace X member using safe and proper manufacturers' recommended techniques.
- Restore corrosion protection.

ROCKER

- Examine rocker to determine whether to repair, section or replace complete panel.
- Identify rocker as two or three piece design.
- Remove damaged section using safe and proper manufacturers' recommended techniques to include removing spot welds, cutting around A & B pillars as necessary sectioning if needed as necessary.
- Replace panel by properly aligning and fastening use factory recommended procedures to include plug welding, butt joint with insert, intermittent lap weld seams.
- Restore corrosion protection.

W/S POST

- Examine pillar to determine whether panel is a two or three piece design.

HINGE PILLAR

- Remove and replace pillar to include removing necessary spot welds and seam cut as necessary to align and fasten replacement panels.
- Check fit adjacent part before welding.
- Weld using recommended techniques.
- Restore corrosion protection and finish.

CENTER PILLAR

- Explain procedure for removing and replacing center pillar.
- Remove center pillar by properly removing all spot welds and seam welds following manufacturers' recommendations.
- Fit replacement panel and seam with clamps, screws, rivets, etc.

- Check fit of adjacent panels.
- Weld panel using recommended procedures.
- Restore corrosion protection and finish.

FLOOR PAN

- Analyze damaged vehicle to determine best area to section floor pan.
- Make necessary cuts to allow for overlap of replacement panels.
- Weld panel according to manufacturers' recommendations to include plug weld overlap from top.
- Restore corrosion protection and seam sealer to weld joint area.
- Undercoat and finish.

SPOT WELD REMOVAL

- Explain various methods to remove spot welds and how each is used to include spot cutter (drill type), spot cutter (hole slow type).
- Explain how to locate spot welds and demonstrate on spot welded panel.
- Remove spot welds using above methods on panel according to recommended procedures.

PANEL SECTIONAL CUTS

- Analyze damaged area on vehicle and determine whether structural integrity of vehicle would be lessened by sectioning.

DAMAGED PANEL REMOVAL AND REPLACEMENT

- Make necessary cuts to remove damage.
- Remove any spot welds and follow manufacturers' recommendations when working with HSLA panels.
- Fasten replacement panels and check fit.
- Restore corrosion protection.
- Finish repaired panel.

Grading Scale: The grading scale is detailed in the *Catalog and Student Handbook* and listed below for reference. All faculty members follow this scale when assigning grades to reflect a given student's performance in the classroom.

Grade	Numerical Equivalent	Grade Point
A/A*	90-100	4
B/B*	80-89	3
C/C*	70-79	2
D/D*	60-69	1
F/F*	0-59	0

Effective Summer Quarter 2006, Athens Technical College replaced the S/U grading system used for learning support classes with an A*-F* grading system. The registrar uses an asterisk (A*, B*,

C*, D*, F*, W*, WF*, WP*) to designate learning support course grades on transcripts and grade reports because these grades are not components of the quarterly grade point average.

Required Textbook(s), including ISBN: Title: Auto Body Repair Technology 4th Edition
Author: James E Duffy
Publisher: Thomson-Delmar Learning
ISBN 0-7668-6272-0

Supplementary Material(s):

Required Equipment/Tools/Resources:

- Note Book w/paper
- Pencil and Pen
- Pencil and Pen
- Leather work gloves
- Leather work gloves

Instructional Technologies Employed:

- Class room
- Live lab
- Hands on

Attendance: Regular class attendance is important and expected. The college considers both tardiness and early departure from class as forms of absenteeism. Students absent from class for any reason are still responsible for all work missed. Instructors have the right to determine whether work missed can be made up and have the liberty to set reasonable expectations for attendance **based on frequency of class meetings and on the instructional delivery method, subject, type, and level of the class.** Class attendance policies will be clearly stated for students by their respective instructors on separate documents (course outlines/schedules) or appendices to the master syllabus.

Grading Policy and Criteria: Students are graded on each written or lab assignment according to the grading rubric for that assignment. Students are responsible for completing each task and submitting each completed task to an instructor for evaluation. The student's shop grade is determined by averaging the assignment grades using a weighted average. Work which is not completed by the end of the quarter will be averaged as a grade of 0. A final written test is taken after completing all written and lab assignments. The grade for the course is 85% of the shop grade plus 15% of the final test grade.

Work Ethics: To fulfill the responsibility to teach essential workplace ethics, the college evaluates program students on attendance, character, teamwork, appearance, attitude, productivity, organizational skills, communication, cooperation, and respect. Because students are preparing for employment, it is essential that they become accustomed to standards of behavior in the workplace. At the conclusion of the quarter, faculty members assign separate numerical work ethics grades which appear beside the course letter grades on both transcripts and grade reports.

The work ethics grading scale is as follows: 3 (Exceeds Expectations), 2 (Meets Expectations), 1 (Needs Improvement), and 0 (Unacceptable).

Academic Honesty: Academic honesty is expected at all times. Any student found to have engaged in academic misconduct such as cheating, plagiarism, or collusion is subject to disciplinary sanctions as outlined in the Student Code of Conduct detailed in the *ATC Catalog and Student Handbook*. The term “plagiarism” includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. The term “collusion” includes, but is not limited to, the unauthorized collaboration with any other person in preparing work offered for academic credit. Students are advised that faculty routinely use **turnitin.com** both to prevent plagiarism and to assist in verifying when/if it has occurred.

Course Withdrawal: Students may withdraw from a course without academic penalty until the midpoint of the quarter (as stated in the Academic Calendar published in the *ATC Catalog and Student Handbook*). By withdrawing before the midpoint of the quarter, the student is automatically assigned a grade of W, which does not affect quarterly or cumulative grade point average. Grades of W will affect satisfactory academic progress for financial aid purposes.

Students who stop attending class(es) without formally withdrawing risk earning a final grade of F, which will appear on the academic transcript. Refer to the *ATC Catalog and Student Handbook* for further details.

Academic Support Center: The Academic Support Centers of Athens Technical College (ATC) provide free tutoring for enrolled students. Both instructors and peer tutors provide tutoring in almost all subjects offered by the college. Information about the Center is accessible via the ATC website at www.athenstech.edu. To find out the specific services available on the Athens, Greene, and Walton Campuses, please call (706) 583-2839. To contact the Academic Support Center on the Elbert County Campus, please call (706) 213-2129.

Americans with Disabilities Act: Any student who believes he/she is eligible for accommodations in the classroom and/or during testing due to a documented disability is encouraged to contact the Director of Student Support Services at (706) 355-5081, or the Coordinator of Disability Services at (706) 355-5006, to apply for assistance. It is our goal at Athens Technical College to provide equal access to education for all students.

Cell Phones and Electronic Devices: Students are strictly prohibited from using cell phones and personal electronic devices within college-owned/operated facilities without the explicit permission of a faculty or staff member.

Food/Drinks in Classroom: Food and beverages (other than water) are not allowed in classrooms/labs.

Warranty of Graduates: The Department of Technical and Adult Education warrants every graduate of technical programs in which students may earn technical certificates of credit, diplomas, or associate degrees. The warranty guarantees that graduates demonstrate the knowledge and skills and can perform each competency as identified in the industry-validated standards

established for every program of study. If one of our graduates educated under a standard program or his/her employer finds that the graduate is deficient in one or more competencies as defined in the course/program standards, Athens Technical College will retrain the employee at no instructional cost to the employee or the employer. This guarantee is in effect for two years after graduation.

TEACH Act: According to the TEACH Act of 2002, Athens Technical College is obligated to advise you that instructional material included in this course may be subject to copyright protection. As such, you must not share, duplicate, transmit, or store the material of this course beyond the purpose and time frame explicitly stated in the syllabus of your course. If you are not certain whether a particular piece of material is covered by copyright protection, you should contact your instructor and obtain his/her written clarification. Failing to observe copyright protection is a violation of law.