

COURSE OUTLINE

AUTO BODY REPAIR

Course Title

AB 110

Dept. and Course Number

I. COURSE DESCRIPTION:

This is a course on the principles and practice of roughing out, dinging, picking, filling, disc sanding, soldering, shrinking, welding and thermoplastic repair. Safe operation of the sander and welding equipment are also stressed.

II. SEMESTER CREDIT: 3

III. CONTACT HOURS PER WEEK:

<u>2</u>	<u>3</u>	<u>5</u>
Lecture	Lab	Total

IV. PREREQUISITE: None

V. STUDENT LEARNING OUTCOMES:

Upon completion of this course, the student will be able with 65% accuracy to:

Student Learning Outcome:

1. Classify vehicles by body style and structural design.
2. Describe the major automobile frame design.
3. List several materials used in the manufacture of modern automobile bodies.
4. Demonstrate measuring alignment and clearances.
5. Identify the tools and equipment used in straightening and shrinking damaged parts of an automobile.

VI. COURSE CONTENT:

- A. Automobile classification
 1. Early model vehicles
 2. Late model vehicles
 3. Foreign or domestic
 4. Position of the engine
 5. Power train configuration
 6. Body style
- B. Auto body construction structural design
 1. Body over frame construction
 2. Unibody construction
 3. Space frame
- C. Automobile construction materials
 1. High strength steels
 2. Aluminum
 3. Plastic composite
- D. Alignment and clearances
 1. Body
 2. Frame
 3. Doors/fenders
 4. Wheel base
- E. Tools and Equipment
 1. Chain block
 2. Pull tab/rod
 3. Hammers and dollies
 4. Slide hammer
 5. A frame
 6. Portable drill with bit

6. Identify and explain types of damage.
 7. Explain on dolly and off dolly dinging.
 8. Explain the safety precautions in straightening damage.
 9. Demonstrate straightening damage using chain block.
 10. Explain safety precautions in repairing rusted and damaged parts.
 11. Replace the rusted and damaged parts.
 12. Demonstrate patching and filling small rusted or dented parts.
 13. Differentiate between spot putties, glazing putties and body fillers.
 14. Identify the safety precautions that should be taken when working with lead- base products.
 15. Show mixing the body filler properly.
 16. Demonstrate applying the body filler properly.
 17. Demonstrate dry and wet sandpapering
 18. Give reasons why plastics are being used extensively in modern automobile.
 19. Describe the methods of identifying plastics.
 20. Differentiate between thermosetting materials and thermoplastic materials.
 21. Explain cohesive and adhesive bonding.
- F. Types of damage
 1. Direct damage
 2. Indirect damage
 3. Minor damage
 4. Major damage
 - G. Dinging technique
 1. On dolly
 2. Off dolly
 - H. Safety precautions
 - I. Straightening technique
 1. Anchoring
 2. Fastening
 3. Pulling
 4. Hooking
 - J. Repairing rusted and damage parts
 - K. Safety precautions
 - L. Replacing rusted parts
 1. Cleaning
 2. Cutting
 3. Fabricate new parts
 4. Tacking and welding
 - M. Technique in patching and filing
 1. Using solder
 2. Using plastic fillers
 3. Fiber glass fillers
 4. Foam fillers
 - N. Types of filler materials
 1. Spot putties
 2. Glazing putties
 3. Body fillers
 - O. Safety precautions
 - P. Mixing procedures
 - Q. Applying technique
 - R. Sandpapering method
 1. Wet sandpapering
 2. Dry sandpapering
 - S. Reasons for use of plastics
 - T. Identifying plastics
 - U. Families of plastics
 - V. Explanation
 1. Cohesion
 2. Adhesion

22. Demonstrate the various techniques used to repair plastic components.

W. Techniques in repairing plastics

1. Hot and cold welding
2. Mechanical fasteners
3. Patch and fill
4. Heat gun

VII. EQUIPMENT AND MATERIALS:

- | | |
|----------------------------|-----------------------|
| A. Portable Electric Drill | J. Dollies/hammers |
| B. Sheet metals | K. Old Car |
| C. Electric Grinder | L. Working table/Vise |
| D. Metal Fasteners | M. Lay out tools |
| E. Metal Files | N. Drill bits |
| F. Shearing Machine | O. Snips |
| G. Body Hand tools | P. Body Filler |
| H. Oxy-acetylene equipment | Q. Sand Paper |
| I. Heat gun | R. Spreader |
| | S. Adhesive |

VIII. TEXT:

Instructor made handouts

IX. METHODS OF INSTRUCTION:

- A. Lecture -Discussion
- B. Demonstrations
- C. Student Projects

X. METHODS OF EVALUATION:

The components with corresponding weight in percent included in the computation of the final grades are:

Class participation.....	10%
Quizzes/Short Tests.....	10%
Midterm/Final Exams.....	30%
Performance.....	50%
TOTAL	100%

The conversion of percent rating to letter grade is as follows:

90-100%.....	A
80-89%.....	B
70-79%.....	C
65-69%.....	D
00-64%.....	F

FORM NC-2
TASK LISTING SHEET

AB 110 Auto Body Repair Credit: 3
Course No. TitleLec2 Lab 3 Total Lab Hours

<p>1. Analyze automobile body, and frame construction.</p> <ul style="list-style-type: none"> a. Raise the car 2 ½ ft. from the ground and secure. a. check alignment b. measure clearances c. measure wheel base d. check body and frame dimensions e. identify reference points f. record the comparison between damaged and undamaged car. 	3
<p>2. Perform the different techniques in straightening and shrinking damaged parts.</p> <ul style="list-style-type: none"> a. remove the damaged parts. b. shrink the damaged parts. c. pull or push the damaged parts d. use a chain block to straighten the damage parts e. straighten the damaged parts f. rough out the damaged parts 	12
<p>3. Repair rusted and damaged parts.</p> <ul style="list-style-type: none"> a. cut the rusty parts with oxyacetylene flame. b. cut the rusted parts with a metal snip c. fabricate new parts d. weld the fabricated parts to the body e. grind extra materials on the welded area f. remove broken bolts and replace. g. make internal and external threads. h. cut a metal plate 3/8 thick with a hack saw. 	15
<p>4. Apply auto body filler and smooth to correct contour.</p> <ul style="list-style-type: none"> a. prepare auto body filler b. mix the body filler c. apply the body filler d. perform dry and wet manual sandpapering e demonstrate machine sanding f. show spot repair g. demonstrate light sandpapering 	12
<p>5. Repair minor damaged plastic parts of an automobile. Put the damaged plastic parts to normal using:</p> <ul style="list-style-type: none"> a. heat gun b. adhesive c. welding d. fasteners 	6

TOTAL:

48 hrs.

Palau Community College
 AB 110 Auto Body Repair
 Course Learning Outcomes

During the course experience, the **course learning outcomes** (CLO) will be assessed through the use of signature assignments. A rating scale will be used to determine the students' proficiency level of each CLO using specifically aligned assignments. The numerical rating of 4,3,2 and 1 are not intended to represent the traditional school grading system of A, B, C, D and F. The descriptions associated with each of the numbers focus on the level of student performance for each of the course learning outcome listed below.

Rating Scale: 4..... Exceeds Expectations
 3.....Meets Expectations
 2..... Developing
 1..... Below Expectations

CLO #1: Students will be able to analyze automobile body and frame construction.

4	Perform the following tasks accurately and completely <ul style="list-style-type: none"> • Identify reference point • Check body and frame dimension • Check doors and fenders alignment • Measure doors and fenders clearances • Measure wheel base
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete
2	Perform the tasks mentioned above with mixed quality, but most are inadequate and incomplete
1	Perform all the tasks mentioned above inaccurately and incompletely

CLO #2: Students will be able to perform the different techniques in straightening and shrinking damaged parts.

4	Perform the following tasks accurately and completely <ul style="list-style-type: none"> • Remove the damaged parts • Straighten and shrink the damaged parts • Rough out the damaged parts • Push or pull the damaged parts
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete
2	Perform the tasks mentioned above with mixed quality, but most are inadequate and incomplete
1	Perform all the tasks mentioned above inaccurately and incompletely

CLO #3: Students will be able to repair rusted and damaged parts.

4	Perform the following tasks accurately and completely <ul style="list-style-type: none"> • Cut the rusted parts • Fabricate new parts • Weld the fabricated parts to the body • Grind extra materials on the welded area
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete
2	Perform the tasks mentioned above with mixed quality, but most are inadequate and incomplete
1	Perform all the tasks mentioned above inaccurately and incompletely

CLO #4: Students will be able to apply body filler and smooth to correct contour.

4	Perform the following tasks accurately and completely <ul style="list-style-type: none">• Prepare the body filler• Mix the body filler• Apply the body filler• Sandpaper to correct contour
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete
2	Perform the tasks mentioned above with mixed quality, but most are inadequate and incomplete
1	Perform all the tasks mentioned above inaccurately and incompletely

CLO #5: Students will be able to repair minor damaged plastic parts of an automobile.

4	Perform the following tasks accurately and completely <ul style="list-style-type: none">• Weld the crack• Patch and fill the damage• Straighten the damage• Remove the scratch• Fasten the crack
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete
2	Perform the tasks mentioned above with mixed quality, but most are inadequate and incomplete
1	Perform all the tasks mentioned above inaccurately and incompletely