Auto Mechanics Fundamentals and Service References
Learning Design

Auto Mechanics Fundamentals and Service References
Learning/Teaching Plans

Learning Plan 1
The Automotive Industry and Shop Safety

Purpose/Overview
The learner will take a close look at the automotive industry today, the changes that are occurring and the role various automotive careers have to play. He/she must follow procedures that guarantee personal and environmental safety.

Learning Plan Information

Title:	The Automotive Industry and Shop Safety
Developer(s):	Charles D. Wasik
Date:	08/21/2005

Performance Expectations

Target Competency (ies)
1. **Identify the safety practices the are associated with working in an automotive repair facility.**

Linked External Standards
Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling;storage, and disposal of chemicals/ materials in accordance all safety and environmental reg

Linked Core Abilities
Act responsibly

Performance Standards

Criteria
o learner recognizes their responsibility to personal, social, professional, educational, and natural environments and makes informed decisions based on that responsibility
o you select the correct [TOOLS, EQUIPMENT, INSTRUMENTS, MATERIALS, SUPPLIES]
o you perform all critical steps in the right order
o you position yourself correctly
o you employ [NAME OF SPECIFIC PROTOCOL, TECHNIQUE, METHODOLOGY, PROCESS]
o you wear personal protective equipment
o you follow safety procedures
o you verbalize an explanation of the process as you perform it
o your explanation presents sound reasoning as you describe the decisions you make throughout the process
o learner assesses personal values and uses them to guide actions and decisions
o WH 12 Interpret/display MSDS (Material Safety Data Sheet) as required
o Locate the MSDS and explain their purpose and how to use them for a specific material commonly used on the factory floor.
o WH 14 Report unsafe practices to appropriate personnel
o The individual or team will identify and report all unsafe practices to appropriate personnel based on OSHA and/or company policies.
o To be documented by third party observations.
o BO 12 Define a safe work environment
o Working alone, the individual will survey a designated work section and identify a minimum of 5 safe conditions and a minimum of 5 correctable unsafe conditions.

Conditions for Assessments
o
o

Learning Objectives
a. Work in an automotive service facility following personal and environmental safety practices.
b. Use the owner's manual as a service resource.
c. Use the owner's manual to verify customer's electrical concern.
d. Define the technicial terms used in the owner's manual.
e. Define the acronyms used in the owner's manual.
f. Identify the symbols used in the owner's manual.

Learning Activities

_____1. PARTICIPATE in program ORIENTATION. (note;) PROGRAM REQUIREMENTS, GOALS , CURRICULUM SEQUENCE, TEXT BOOKS REQUIRED, The use of LEARNING PLANS (LP's), LEARNING ACTIVITIES (LA's), PERFORMANCE ACTIVITIES (PA'S), and PERFORMANCE ASSESSMENT ACTIVATES (PAA"s).

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____2. READ SYLLABUS (note PERFORMANCE ASSESSMENT REQUIREMENTS)

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____3. REVIEW course safety information, requirements, competencies, time line and evaluation procedures with the instructor

Properties

Cycle: Motivation *Group Size:* Individual *Focus:* Teacher Centered *Environment:* *Content Type:* Fact *Intelligence:* Verbal/Linguistic *Learning Style:* Conceptualizing *Brain:* Left Brain *VAK:* Visual *Notes:*

_____4. COMPLETE the following, PORTFOLIO FOLDER, PROGRAM INFORMATION SHEETS and YOUR WEEKLY ATTENDANCE SCHEDULE,

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____5. View safety videos, Bergwall safety series.

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____6. View safety videos, "Lifting it Right"

Properties

Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*

_____7. VIEW a DVD/video, Video 4- Floor Jacks & Jack Stands

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____8. VIEW a DVD/video, Video 5- Using Lifts

Properties

Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*

_____9. Complete Text book related, 1-10 safety performance activities. (each activity must be initialed and rated by the instructor then added to your portfolio folder)

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____10. REVIEW the Shop Safety Test results with the instructor or facilitator.(a score of 100% is required)

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____11. RETAKE the Shop Safety test as directed by the instructor or facilitator.

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____12. READ Chapters 1,2&3 in TEXT, AUTOMOTIVE TECHNOLOGY, ANSWER Review Questions. Place in "Not Corrected Box" or have corrected by an Instructor.

Properties

Cycle: *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* Concept *Intelligence:* Verbal/Linguistic *Learning Style:* Conceptualizing&Doing *Brain:* Right Brain&Left Brain *VAK:* Auditory *Notes:*

_____13. Redo incorrect answers on review questions as directed by your Instructor.

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____14. ANSWER objective questions regarding shop safety

Properties

Cycle: *Group Size:* *Focus:* Teacher Centered *Environment:* *Content Type:* * *Intelligence:* Logical/Mathematical *Learning Style:* Conceptualizing *Brain:* Left Brain *VAK:* Auditory *Notes:*

_____15. OBTAIN LP-2 from your facilitator

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

Assessment Activities

_____1. Demonstrate the use of safety, lifting and hoisting equipment in the lab.
_____2. Locate MSDS sheet for chemicals use in the lab.
_____3. Demonstrate personal and environmental safety in the lab.

Learning Plan 2
Fasteners, Hand Tools and Mesurements

Purpose/Overview

The repair and service of today's light duty vehicle requires the use of various tools. Many of these tools are common hand and power tools. Other tools are very specialized and are for specific repairs on specific systems or specific vehicles. This learning plan will present some of the more commonly used hand and power tools.

Learning Plan Information

Title: Fasteners, Hand Tools and Mesurements
Developer(s): Charles D. Wasik
Date: 08/21/2005

Performance Expectations

Target Competency (ies)

3. **Grind, sharpen, and learn the proper use, repair and maintenance of hand tools.**

Linked External Standards
MF 17 Operate hand tools in a safe prescribed manner

Linked Core Abilities
Value learning

Performance Standards

Learning Objectives
a. Demonstrate the safe and proper use, maintenance of hand tools.

4. **Use measuring tools to lay out a project including drilling, tapping, removing broken bolts, and installing a Hellicoil.**

Linked External Standards
MM 10 Demonstrate proper general measurement techniques

Linked Core Abilities
Demonstrate essential mathematical skills
Value learning

Performance Standards

Learning Objectives
a. Demonstrate the proper care and use of the various measuring tools.

Learning Activities

_____1. REVIEW Learning Plan 2 and obtain UNIT 7 from instructor (ASK INSTRUCTOR TO CLARIFY ANY OF THE ACTIVITIES OR DIRECTIONS LISTED)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____2. READ chapter 5 in the textbook
Properties
Cycle: *Group Size:* Individual *Focus:* Teacher Centered *Environment:* *Content Type:* Concept&Fact *Intelligence:* Verbal/Linguistic *Learning Style:* Conceptualizing *Brain:* Left Brain *VAK:* Visual *Notes:*

_____3. WRITE, the answers to the chapter 5 review questions. Place in "Not Corrected Box" or have corrected by an Instructor.
Properties
Cycle: *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* Concept *Intelligence:* Verbal/Linguistic *Learning Style:* Conceptualizing&Doing *Brain:* Right Brain&Left Brain *VAK:* Auditory *Notes:*

_____4. READ UNIT 7. AUTOMOTIVE HAND TOOLS
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____5. VIEW, Hand Tool Safety video.(Snap-on)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____6. VIEW a DVD/video, Video 7- Torque Wrenches
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*

_____7. Have instructor assign you to a student tool set and review tool inventory, YOU MUST BE FAMILIAR WITH THE NAMES AND PROPER USE OF ALL THE TOOLS INCLUDED IN THIS SET. CIRCLE ANY ITEMS LISTED ON THE INVENTORY BUT NOT FOUND. Sign and date inventory

Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes*
_____8. VIEW VIDEO , FASTENERS AND TORQUING (FMC)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes.*
_____9. VIEW a DVD/video, Video 9- Repairing Threads
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*
_____10. COMPLETE, AYES- AO, UNIT 7- AUTOMOTIVE HAND TOOLS, JOB SHEETS 11- Using a Torque Wrench (each activity must be initialed and rated by the instructor then added to your portfolio folder)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____11. COMPLETE, AYES- AO, UNIT 7- AUTOMOTIVE HAND TOOLS, JOB SHEET 12-Restoring External Threads. (each activity must be initialed and rated by the instructor then added to your portfolio folder)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____12. Obtain Unit 7 Review questions and scan-tron answer sheet from the instructor.(answer the questions and have the iinstructor correct)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____13. RETAKE or make corrections to UNIT 7 Review as directed by instructor (add corrected answer sheet to your portfolio)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____14. OBTAIN LP-3 from your facilitator
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

Assessment Activities
_____1. Identify Metric and Standard fasteners for, size, pitch and grade.
_____2. Identify automotive hand tools.
_____3. USE a torque wrench

Learning Plan 3
Precision Measuring Tools

Purpose/Overview
Precision tools are used by the technician to evaluate mechanical wear conditions and assure the proper assembly of components. The technician must be able to use standard and metric units of measure.

Learning Plan Information
Title: Precision Measuring Tools
Developer(s): Charles D. Wasik
Date: 08/21/2005

Performance Expectations

Target Competency (ies)
4. **Use measuring tools to lay out a project including drilling, tapping, removing broken bolts, and installing a Hellicoil.**

Linked External Standards
MM 10 Demonstrate proper general measurement techniques

Linked Core Abilities
Demonstrate essential mathematical skills
Value learning

Performance Standards

Learning Objectives
a. Demonstrate the proper care and use of the various measuring tools.
5. **Use precision measuring tools. .**

Linked External Standards
MM 11 Demonstrate proper precision measurement techniques

Linked Core Abilities
Demonstrate essential mathematical skills

Performance Standards

Learning Objectives
a. Demonstrate the proper care and use of the various automotive precision measuring tools.

Learning Activities
_____1. REVIEW Learning Plan 3 and obtain UNIT 8 from instructor (ASK INSTRUCTOR TO CLARIFY ANY OF THE ACTIVITIES OR DIRECTIONS LISTED)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____2. READ AYES UNIT A0 Fundamentals of Automotive Technology UNIT 8, LESSONS 1-3
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____3. Obtain Unit 8 Review questions and scan-tron answer sheet from the instructor.(answer the questions and have the instructor correct)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____4. VIEW MACHINE TOOL VIDEO'S (V-4,V-5,V-6,V-7,V-8,V-10,V-11,V-14,V-21,V-22,V-24,V-25,V-26 and #2109.
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____5. VIEW a DVD/video. "Precision Measuring Tools"
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*
_____6. VIEW a video, Starret "The Outside Micrometer"
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*
_____7. VIEW a video, "The Vernier Caliper"
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*
_____8. VIEW a video, "The Vernier Height Gauge"
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*
_____9. READ "how to" directions, Starrett "Tools & Rules for Precision Measuring"
Properties
Cycle: Comprehension *Group Size:* Individual&Small Group *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Verbal/Linguistic *Learning Style:* Conceptualizing&Doing *Brain:* Left Brain *VAK:* Visual *Notes:*
_____10. COMPLETE AYES, AO - UNIT 8-" SPECIALTY TOOLS, MEASURING", JOB SHEETS (13-17). (each activity must be initialed and rated by the instructor then added to your portfolio folder)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____11. VIEW a DVD/video, Video 1 - Using Grinders & Chisels
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*
_____12. COMPLETE LEARNING ACTIVITIES 18-21 (each activity must be initialed and rated by the instructor then added to your portfolio folder)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____13. VIEW a DVD/video, Video 8- Battery Adapters
Properties
Cycle: Comprehension *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* * *Intelligence:* Visual/Spatial *Learning Style:* *Brain:* Right Brain *VAK:* Visual *Notes:*
_____14. COMPLETE LEARNING ACTIVITIY #22. (construct a pair of Side Post Battery Adapters from .875" aluminum bar stock. NOTE; each MUST be 1.250" in length with a 3/8" NC stud extending 3/8" from one end and a 3/8" NC heli-coil installed in the other, using a drill press and hand tools only). THE INSTRUCTOR WILL EVALUATE YOUR WORK BASED ON THE ITEMS LISTED AT THE BOTTOM OF THE JOB SHEET.
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:*

_____15. Turn in the adapters for examination by an instructor. (Adapters will be inspected for finish and exactness to dimensions.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes

_____16. OBTAIN LP-4 from your facilitator

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes

Assessment Activities

_____1. Read micrometer settings.
_____2. Drill holes with a drill press.
_____3. Reshape a cold chisel.
_____4. Cut flat metal with a cold chisel.
_____5. Dress a grinding wheel.
_____6. Draw file a flat surface.
_____7. Drill a twist drill hole to correct center.
_____8. Remove a broken stud with an screw extractor (EZ out)
_____9. Double Flare a brake line.
_____10. Drill, tap, and install a 3/8" helicoil.
_____11. Drill and tap for a 5/16"-NC THREAD in a piece of 1/2" flat stock.
_____12. Use outside micrometers.
_____13. Use the inside micrometers.
_____14. Setting up and use a dial indicator. (end play readings)
_____15. Measure engine/transmission parts to practice skills.

Learning Plan 4
Basic Welding

Purpose/Overview

A technician may be required to use various welding and heating equipment. The safe and proper use of this equipment is essential. Proficience and skill can only be attained through practice. The learner will demonstrate safety procedures and basic welding techniques.

Learning Plan Information

Title:	Basic Welding
Developer(s):	Charles D. Wasik
Date:	08/21/2005

Prerequisites

o MUST HAVE COMPLETED LEARNING PLAN 4.

Performance Expectations

Target Competency (ies)

6. **Perform Oxyacetylene welding, brazing ,cutting and heating, following proper safety procedures.**

Linked External Standards

WH 15 Operate equipment in a safe, prescribed manner

Linked Core Abilities

Act responsibly

Performance Standards

Learning Objectives

a. Demonstrate basic gas welding techniques and the respective safety procedures.

7. **Perform Sheilded Metal Arc Welding (SMAW) and GAS METAL ARC WELDING (GMAW) following proper safety procedures.**

Linked External Standards

WH 15 Operate equipment in a safe, prescribed manner

Linked Core Abilities

Act responsibly

Performance Standards

Learning Objectives

a. Demonstrate basic wire welding techniques and the respective safety procedures.

Learning Activities

_____1. OBTAIN and REVIEW, LEARNING PLAN 4, BASIC WELDING STUDENT REFERENCES. Includes -Welding Safety and Welding Procedures.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes.

_____2. READ WELDING SAFETY REFERENCE, Obtain from your Instructor.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____3. COMPLETE WELDING SAFETY TEST, have instructor correct,

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____4. CORRECT WELDING SAFETY TEST. as directed by instructor.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____5. READ WELDING PROCEDURES. STUDENT REFERENCE.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____6. OBTAIN and READ, STUDENT REFERENCE S 1&2. OXYACETYLENE EQUIPMENTand OXYACETYLENE WELDING AND BRAZING.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____7. OBTAIN and COMPLETE, OXYACETYLENE, EXERCISES 1-8

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____8. AVERAGE RATING FOR EXERCISES 1-8,

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____9. OBTAIN and READ, STUDENT REFERENCE 3. SHEILDED METAL ARC WELDING (SMAW).

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____10. OBTAIN and COMPLETE, SMAW EXERCISE 9

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____11. EXERCISE 9 RATING,

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____12. OBTAIN and READ, STUDENT REFERENCE 4, GAS METAL ARC WELDING (GMAW).

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____13. OBTAIN and COMPLETE, GMAW, EXERCISE 10

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____14. EXERCISE 10 RATING,

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____15. AVERAGE RATING FOR EXERCISES 1-10.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____16. OBTAIN LEARNIG PLAN 5.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

Assessment Activities

_____1. Set up equipment for oxyacetylene torch for metal heating and reshaping. (Muffler pipes)
_____2. Set up equipment for oxyacetylene torch welding and brazing.
_____3. Braze and weld lap and butt joints.
_____4. Set up equipment for oxyacetylene cutting.
_____5. Set up a SHEILDED METAL ARC WELDER and perform welding tasks.
_____6. Set up a GAS METAL ARC WELDER and perform welding tasks.

Learning Plan 5

Wiring Repair

Purpose/Overview

A large percentage of electrical and electronic circuit problems can be traced to voltage drop within the circuit. Corrosion and poc terminial contact can be the cause for these voltage losses. The correction is the repair of the wiring and or terminal replacement The learner will demonstrate soldering safety, proper wiring repair techniques and terminial repalcement.

Learning Plan Information

Title: Wiring Repair
Developer(s): Charles D. Wasik
Date: 08/21/2005

Performance Expectations

Target Competency (ies)

8. **Demonstrate wire repair techniques.**

Linked External Standards

NATEF-VI A. 11 Repair wiring harnesses and connectors.
NATEF-VI A. 12 Perform solder repair of electrical wiring.

Linked Core Abilities

Think critically and creatively

Performance Standards

Learning Objectives

a. Demonstrate automotive wiring repairs.

Learning Activities

_____1. REVIEW Learning Plan 5 and OBTAIN ELECTRICAL DIAGNOSIS SECTION 8A, REVIEW WIRE REPAIR, SOLDERING AND TERMINAL REPLACEMENT, (ASK INSTRUCTOR TO CLARIFY ANY OF THE ACTIVITIES OR DIRECTIONS LISTED)

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____2. READ chapter 14 in the textbook RELATED TO ELECTRICAL WIRE REPAIR (Automotive Technology).

Properties

Cycle: *Group Size:* Individual *Focus:* Teacher Centered *Environment:* *Content Type:* Concept&Fact *Intelligence:* Verbal/Linguistic *Learning Style:* Conceptualizing *Brain:* Left Brain *VAK:* Visual *Notes:*

_____3. Write the answers to the review questions RELATED TO WIRE REPAIR in chapter 14 (add to your porfolio folder)

Properties

Cycle: *Group Size:* *Focus:* Learner Centered *Environment:* *Content Type:* Concept *Intelligence:* Verbal/Linguistic *Learning Style:* Conceptualizing&Doing *Brain:* Right Brain&Left Brain *VAK:* Auditory *Notes:*

_____4. READ ELECTRICAL DIAGNOSIS SECTION 8A, REVIEW WIRE REPAIR, SOLDERING AND TERMINAL REPLACEMENT,

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____5. VIEW VIDEO 3, " Electrical Wire Repair" I-CAR,

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____6. VIEW VIDEO 4, " SOLDERING TECHNIQUES",

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____7. Complete--Wiring Repair and Soldering Activity --LP-23, REFER to Wiring Repair section of Section 8A.

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____8. OBTAIN LP-6 from your facilitator

Properties

Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

Assessment Activities

_____1. Identify wire sizes.
_____2. Tin using rosin core solder.
_____3. SOLDER a splice.
_____4. OBTAIN COMPONENTS TO CONSTRUCT a SPADE FUSE JUMPER WIRE, SOLDER EYE TERMINALS ON EACH

END

_____5. Wrap a splice with electrical tape.
_____6. USE SHRINK TUBING to make a water tight connection.

Learning Plan 6
Introduction to Automotive References

Purpose/Overview
The modern day vechicle incorporates an ever increasing number of driver initiated electronically controlled systems. The owner's manual is the source for information as to how these systems are actuated and the conditions for their use. A customer concern about abnormal or incorrect operation of a system may be related to misinterpretation of the technical information given i the manual. As a technican, you must be familiar with the manual and use it as an effective resource for specific vehicle service recommendations, specifications for the proper and safe procedures given in the manual. The owner's manual may be the resource for you to verify that the customer's concern actually exists or has been repaired. You will use an owner's manual to verify and locate the root cause for an electrically related customer concern on a vehicle in the lab.

Basic maintenance services will also be performed.

The student will conduct a safety inspection.

Learning Plan Information

Title:	Introduction to Automotive References
Developer(s):	Charles D. Wasik
Date:	08/21/2005

Performance Expectations

Target Competency (ies)
9. **Read and interpret technical information.**

Performance Standards

Learning Objectives
a. Use the owner's manual as a service resource.
b. Use the owner's manual to verify customer's electrical concern.
c. Define the technicial terms used in the owner's manual.
d. Define the acronyms used in the owner's manual.
e. Identify the symbols used in the owner's manual.

10. **Use electronic service information**

Performance Standards

Learning Objectives
a. Locate technical repair information on Alldata internet service.
b. Locate technical repair information on Shopkey internet service.
c. Search Alldata and Shopkey for Technical Service Bulletins
d. Search the National Highway Transportataion Safety Administration web site for vehicle recalls.

Learning Activities
_____1. REVIEW Learning Plan 6 (ASK INSTRUCTOR TO CLARIFY ANY OF THE ACTIVITIES OR DIRECTIONS LISTED)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____2. Ask facilitator for LEARNING ACTIVITY PACKET 1(LAP-1) NOTE ; (LAP-1) should include. UNIT I Technical Resource,(white pages), Glossary, CASE STUDY worksheet, OWNER'S MANUAL worksheet, Lessons 1-3 worksheets (yellow pages) PERFORMANCE ASSESMENTS.
Properties
Cycle: Motivation *Group Size:* Individual *Focus:* Learner Centered *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____3. READ TEXT Chapter 4
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
_____4. ANSWER Chapter 4 Review Questions.
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*
5. SUBMIT Review Questions for Instructor evaluation

Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____6. REVIEW the Review Questions and correct as needed.
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____7. COMPLETE Learning Activity #1, "Owners Manual"
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____8. COMPLETE Learning Activity #2, "Owners Manual"
Properties
Cycle: Application *Group Size:* Individual *Focus:* Learner Centered *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____9. ANSWER and REVIEW OWNER'S MANUAL Worksheet with instructor or facilitator
Properties
Cycle: Comprehension *Group Size:* Individual *Focus:* Learner Centered *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

Learning Plan 7
Read and Interpret Technical Information

Purpose/Overview
The learner must read and interpret technical information to perform vehicle service and repairs. He must be able to determine the parts that must be replaced, the tools required and determine the cost of parts and labor for the customer.

Learning Plan Information

Title:	Read and Interpret Technical Information
Developer(s):	Charles D. Wasik
Date:	08/21/2005

Performance Expectations

Target Competency (ies)
9. **Read and interpret technical information.**

Performance Standards

Learning Objectives
a. Use the owner's manual as a service resource.
b. Use the owner's manual to verify customer's electrical concern.
c. Define the technicial terms used in the owner's manual.
d. Define the acronyms used in the owner's manual.
e. Identify the symbols used in the owner's manual.

10. **Use electronic service information**

Performance Standards

Learning Objectives
a. Locate technical repair information on Alldata internet service.
b. Locate technical repair information on Shopkey internet service.
c. Search Alldata and Shopkey for Technical Service Bulletins
d. Search the National Highway Transportataion Safety Administration web site for vehicle recalls.

Learning Activities
_____1. REVIEW Learning Plan 7 (ASK INSTRUCTOR TO CLARIFY ANY OF THE ACTIVITIES OR DIRECTIONS LISTED)
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____2. COMPLETE Learning Activity #3
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____3. Read and interpret a manufactures repair manual to determine the parts that must be removed and those that will require replacement when performing a complete brake job. (Vehicle will be identified by your instructor).
Properties
Cycle: *Group Size:* *Focus:* *Environment:* *Content Type:* *Intelligence:* *Learning Style:* *Brain:* *VAK:* *Notes:*

_____4. Use a parts manual to identify part numbers for the

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes

_____5. Use a labor guide to determine the time required to perform the service or repair.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes.

Learning Plan 8
Use Electronic Service Information

Purpose/Overview
The learner must be able to access information provided electronically. The learner will use this medium to perform vehicle service and access technical service bulletins.

Learning Plan Information

Title:	Use Electronic Service Information
Developer(s):	Charles D. Wasik
Date:	08/21/2005

Performance Expectations

Target Competency (ies)
10. **Use electronic service information**

Performance Standards

Learning Objectives
a. Locate technical repair information on Alldata internet service.
b. Locate technical repair information on Shopkey internet service.
c. Search Alldata and Shopkey for Technical Service Bulletins
d. Search the National Highway Transportataion Safety Administration web site for vehicle recalls.

Learning Activities
_____1. REVIEW Learning Plan 8 (ASK INSTRUCTOR TO CLARIFY ANY OF THE ACTIVITIES OR DIRECTIONS LISTED)

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____2. Search online for State of WI. statute AG 132

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____3. Use electroniclally generated service information determine the parts that must be removed and those that will require replacement when performing a complete brake job. (Vehicle will be identified by your instructor).

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____4. Use electroniclally generated parts manual to identify part numbers for the parts identified in the previous activity.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____5. Use electroniclally generated labor guide to determine the time required to perform the service or repairof the vehicle identified in activity 1.

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____6. Complete a repair estimate for a customer concern using electronic service information system. ALLDATA, or MITCHELL ON-DEMAND (include; labor, all parts and/or fluids and OEM part numbers).

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

Learning Plan 9
Writing Repair Orders and Estimates

Purpose/Overview
The law requires that a repair order must be completed before any service or repairs may be performed on a customer's vehicle and most states require an estimate be provided before any work is done. Wisconsin motor vehicle trade practices are explained in Wisconsin regulation ATCP 132. The learner will complete repair orders and estimates following state guidelines.

Learning Plan Information

Title:	Writing Repair Orders and Estimates
Developer(s):	Charles D. Wasik

Date: 08/21/2005

Performance Expectations

Target Competency (ies)

11. **Write repair orders and estimates**

Performance Standards

Learning Objectives

a. Study ATCP 132 Wisconsin motor vehicle repair trade practices
b. Determine labor costs using a flat rate schedule.
c. Obtain costs of parts and supplies.

Learning Activities

_____1. REVIEW Learning Plan 9 (ASK INSTRUCTOR TO CLARIFY ANY OF THE ACTIVITIES OR DIRECTIONS LISTED)

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes:

_____2. Complete repair orders and/or repair estimates for three vehicle repairs. (The instructor will identify the vehicles a the repairs to be addressed).

Properties

Cycle: Group Size: Focus: Environment: Content Type: Intelligence: Learning Style: Brain: VAK: Notes: