AUTO 140A: VEHICLE MAINTENANCE

Discipline

AUTO - Automotive Technology

Course Number

140A

Course Title

Vehicle Maintenance

Catalog Course Description

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is intended to be the beginning course in the Maintenance and Light Repair (MLR) curriculum. This course is focused on developing workplace skills that will allow a student to competently perform a detailed multi-point inspection and conduct fluid maintenance on select vehicle subsystems. Appropriate lab activities are included. 54 lecture hours, 54 lab hours.

Course Purpose

Degree Applicable

Instruction Type(s)

Lecture
Lab

Minimum Qualifications

Automotive Technology and either ASE A6, A1, A2, and A4, or ASE G1

General Education/Degree/Transfer Course

Transferable to UC

No

CSU GE Areas

CSU GE Areas

No

IGETC Areas

IGETC Areas

No

Course Units/Hours

Credits

4

Lecture Hours

54

For every hour of lecture, student is expected to spend two hours of study outside of class.

Lab Hours

54

Hours Arranged

0

Is this course repeatable?

No

Maximum Enrollment (Lecture):
20

Grading Method
Standard Letter, Pass/No Pass

Fee Information

Materials Fee
No

Student Learning Outcomes

Upon satisfactory completion of the course, students will be able to:

Competencies
Discipline/Subject Area Specific Content Material

Outcome
The individual will develop the skills perform needed fluid services and/ or flushes (excluding P/S and brake fluid) and competently complete a multi-point inspection form.

Assessment
This outcome will be assessed by written examinations based on maintenance related knowledge and procedures and by skills based proficiency examinations.

Competencies
Creative, Critical, and Analytical Thinking

Outcome
Given a vehicle for routine maintenance, the student will be able to evaluate the condition of the vehicle systems, by taking measurements, fluid samples and performing tests, then the student will analyze the results to recommend corrective action. The recommendations should be based on industry standards and manufacture's specification.

Assessment
Student will use criterion referenced instruction based lab sheets to perform inspections and repair on "bugged" vehicles or "live work" vehicles. Lab sheets will be assessed.

Course Objectives

Course Objectives

	Objective
1	Identify vehicle labels and identification numbers and interpret the content.
2	Inspect belts and hoses and identify corrective action.
3	Perform accessory belt/s and hose/s removal and replacement following manufacture procedures.
4	Check battery conditions using visual inspection and electronic tester to recommend corrective action by interpreting the visual and electronic test results.
5	Perform brake system inspections, including brake lining thickness, and component inspection to recommend corrective action based upon manufacture's specification.
6	Locate service information on electronic service information platforms common to the industry and interpret the results.
7	Document services on repair orders using "Concern, Cause, and Remedy" form and meeting the guidelines provided by the California Bureau of Automotive repair.
8	Inspect the fluid condition and level and identify corrective action basic on manufacturer's specification or industry standards for following vehicle fluids: Engine oil Automatic transmission oil Manual transmission oil Differential oil Transfer case oil Engine Coolant

9	service the following vehicle fluids following manufacture's procedures: Engine oil Automatic transmission oil Manual transmission oil Differential oil Transfer case oil Engine Coolant
10	Inspect P/S and brake fluid level and condition.
11	Flush the following vehicle fluids: Automatic transmission Manual transmission Differential oil Engine Coolant
12	Locate the procedures and perform service/maintenance reminder resets.
13	Identify tires wear and recommend corrective action, adjust tire pressure, perform tire rotations and TPM system compensation to manufacturer's specification.

Course Content

Major Course Content

I. Industry Exposure
  A. Organizations
    Technician credentialing and licensing
    Industry standards
  B. Careers
    Salary expectations
    Pay structure
    Skill and physical requirements
II. Service Equipment Usage, Procedures and Safety
  A. Hand Tools
  B. Vehicle Lifting Apparatus
  C. Pneumatic Tools
  D. Cleaning Equipment
  E. Precision Measuring Tools
  F. Hazardous Materials
  G. Fasteners
  H. Identification
  I. Sealants, gaskets, and seals
III. Service Literature and Vehicle Information
  A. Vehicle Identification Numbers
  B. Vehicle Labels
  C. Specifications
  D. Maintenance Schedules
  E. Technical Service Bulletins
  F. Safety Recalls and Special Service Campaigns
  G. Locate service information on electronic service information platforms.
  H. Document services on RO using CCR.
IV. On vehicle inspection
  A. Inspect vehicle fluids:
    Engine oil
    Automatic transmission oil
    Manual transmission oil
    Differential oil
    Transfer case oil
    Engine Coolant
    Power steering
    Brake fluid
  B. Service vehicles fluids:
    Engine oil
    Automatic transmission oil
    Manual transmission oil
    Differential oil
    Transfer case oil
    Engine Coolant
  C. Flush the following fluids:
    Engine oil
    Automatic transmission oil
    Manual transmission oil
    Differential oil
    Transfer case oil
    Engine Coolant
  D. Locate the procedures and perform service reminder resets.

E. Tires
1. Inspect tires for wear
2. Adjust tire pressure
3. Perform tire rotations
4. TPM system compensation

F. Belt and Hoses
1. Inspect belts and hoses for service.
2. Adjust belts
3. Replace belts and hoses
4. Pressure test cooling system

G. Check battery conditions using visual inspection and electronic tester
H. Perform brake system inspection
1. Brake lining thickness
2. Component inspection.

Lab Content

I. Service Equipment Usage, Procedures and Safety
A. Hand Tools
B. Vehicle Lifting Apparatus
C. Pneumatic Tools
D. Cleaning Equipment
E. Precision Measuring Tools
F. Hazardous Materials
G. Fasteners
H. Identification
I. Sealants, gaskets, and seals

II. Service Literature and Vehicle Information
A. Vehicle Identification Numbers
B. Vehicle Labels
C. Specifications
D. Maintenance Schedules
E. Technical Service Bulletins
F. Safety Recalls and Special Service Campaigns
G. Locate service information on electronic service information platforms.
H. Document services on RO using CCR.

III. On vehicle inspection
A. Inspect vehicle fluids:
Engine oil
Automatic transmission oil
Manual transmission oil
Differential oil
Transfer case oil
Engine Coolant
Power steering
Brake fluid

B. Service vehicles fluids:
Engine oil
Automatic transmission oil
Manual transmission oil
Differential oil
Transfer case oil
Engine Coolant

C. Flush the following fluids:
Engine oil
Automatic transmission oil
Manual transmission oil
Differential oil
Transfer case oil
Engine Coolant

D. Locate the procedures and perform service reminder resets.
E. Tires

1. Inspect tires for wear
2. Adjust tire pressure
3. Perform tire rotations
4. TPM system compensation

F. Belt and Hoses

1. Inspect belts and hoses for service.
2. Adjust belts
3. Replace belts and hoses
4. Pressure test cooling system

G. Check battery conditions using visual inspection and electronic tester
H. Perform brake system inspection

1. Brake lining thickness
2. Component inspection.

Requisites & Entrance Skills

Prerequisites

(s): MATH 029 (or higher) if required by Math placement exam or if required by Math level, and/or with department consent.

Strongly Recommended

ENGL 101.

Methods of Assessment

Methods of Instruction

Course Textbooks/Resources

Resource Type

Book

Formatting Style

MLA

Required or Supplemental

Required

Description

Halderman,J,D.*Automotive Maintenance and Light Repair*, Pearson Publishing , 2014. Print. , ISBN: 978-0-13-3405.
(ISBN)978-0-13-340518-7

Course Assignments

Suggested reading other than required textbook:

Student will complete instructor selected Pearson MyAutoLab modules that are related to the subject.

Learning Modules will include a glossary of automotive terms, a synopses of sub-system operation and component operation. The following English 98 outcomes should be used: 1. ENGL 098 - employ effective study habits and respond to oral and written directions and
assignments. 2. ENGL 098 - increase personal vocabulary through the use of context clues, structural analysis
and the dictionary. 3. ENGL 098 - increase literal comprehension of relevant reading passages by identifying main ideas and significant details.

Examples of Outside Assignments:

Student will use electronic service information to complete guided discovery based learning.

Students will be using tables, charts and graphs along with written text to explain how a automotive sub-system works, how to inspect it and/or how to bring it back into specification during service. For example inspecting brake rotor variation of parallelism or finding circuit Amperes when Voltage and Resistance is known.

These activities will incorporate the following English and Math skills.

1. ENGL 098 - increase personal vocabulary through the use of context clues, structural analysis and the dictionary.

2. ENGL 098 - increase literal comprehension of relevant reading passages by identifying main ideas and significant details.
3. MATH 029 - Analyze and solve application problems by applying a systematic problem-solving strategy that utilizes linear equations in one variable.
4. MATH 029 - Critically examine and interpret graphs and tabular data
5. MATH 029 - Develop an understanding of the rules for signed numbers by performing addition, subtraction, multiplication, and division on positive and negative real numbers
6. MATH 029 - Demonstrate an understanding of how to solve and check solutions of linear equations in one variable (involving whole numbers, integers, fractions, and decimals) by applying properties of equality and simplification rules.
7. MATH 029 - Develop an understanding of how to write equivalent expressions by applying the fundamental properties of fractions
8. MATH 029 - Use proper mathematical notation and format

Examples of Required Writing Assignments:

Students will be assigned industry based technical article evaluation from trade journals.

1. ENGL 098 - appreciate reading as a desirable and pleasurable adult activity
2. ENGL 098 - generate and organize ideas appropriate for reading responses
3. ENGL 098 - Use a variety of sentence types (including simple, compound, complex, compound/complex) in their writing.
4. ENGL 098 - demonstrate basic punctuation skills in their writing and reading responses.

Classification & Codes