AUTO 144: AUTOMOTIVE CHASSIS MLR

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2023
Credits:	4
Total Contact Hours:	108
Lecture Hours :	54
Lab Hours:	54
Hours Arranged:	0
Outside of Class Hours:	108
Total Student Learning Hours:	216
Strongly Recommended:	ENGL 101; MATH 144; AUTO 140A or one year of employment as automotive technician.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter, Pass/No Pass

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 part of the Maintenance and Light Repair (MLR) curriculum. The course covers essential chassis system theory; inspection, diagnosis, service and repair of the following undercar systems: Steering, suspension, alignment, wheels and tires. Course prepares students for ASE Suspension and Steering (A4) certification. 54 lecture hours, 54 lab hours.

Course Objectives

- Flush, fill and bleed the power steering system following manufacturer's repair procedures.
- Replace and repair tires in accordance with the Rubber Manufacturer's Association's guidelines.
- Conduct suspension component inspection and recommend corrective action.
- Inspect and replace FWD wheel bearings following manufacturer's repair procedures.
- Inspect and replace Constant Velocity (CV) axles and CV boots following manufacturer's repair procedures.
- Inspect and replace shocks and struts following manufacturer's repair procedures.
- Inspect and adjust vehicle alignment following manufacturer's repair procedures.
- Adjust vehicle alignment with the use of aftermarket shims and components, following aftermarkets manufacturer's repair procedures.

Major Course Content

1. Safety Specific to the Chassis System
2. Fasteners, Gaskets and Seals Specific to the Chassis System
3. Tire and Wheel
    a. Construction and sizing
    b. Ratings
    c. Theory, service, diagnosis, and repair of the following
        i. Runout
        ii. Imbalance
        iii. Replacement and patching
        iv. Road Force Variation
4. Introduction to Low Tire Pressure Monitoring Systems
    a. Direct and Indirect
5. Theory, Service, Diagnosis and repair of the following Suspension systems
    a. MacPherson and Modified Strut
    b. Double wishbone/ Short-Long Arm
    c. Solid Live Axle
    d. Trailing Arm
    e. Multi-link
    f. Twin I-Beam
    g. Semi-independent Rear
6. Introduction to Electronic Ride Control
7. Theory, Service, Diagnosis and repair of the following Steering systems and subsystems
    a. Rack and Pinion
    b. Recirculating Ball
    c. Hydraulic Power Assist
    d. Steering linkage
8. Introduction to Electronic Power Steering
9. Steering and Suspension Geometry
    a. Basic alignment theory, service, diagnosis and repair
        i. Caster, Camber, and Toe (individual and total)
        ii. Introduction to Advanced alignment techniques
            1. SAI, IA, Ackerman
            2. Determining structure damage using SAI, Camber, and IA
10. Service Literature Specific to the Chassis
11. Repair Order Documentation specific to the Chassis

Lab Content

1. Operation and use of the following
    a. Four wheel alignment hoist and computer
    b. Various hand tools related to chassis diagnosis, service and repair
    c. Various specialty tools related to chassis diagnosis, service and repair
2. Service, Diagnosis, and Repair of the following Chassis Systems
    a. Wheel Bearings
        i. Serviceable
        ii. Non-serviceable
    b. Tires and Wheels
    c. Suspension
    d. Steering
    e. Alignment (suspension and steering geometry)

Suggested Reading Other Than Required Textbook

Industry related periodicals

Examples of Required Writing Assignments

3-4 page research paper using APA format on future of chassis development, chassis

Examples of Outside Assignments

Complete ASE review/preparation questions precision measuring worksheets

Instruction Type(s)

Lab, Lecture, Online Education Lecture