Laboratory Contact Hours: 48-54; Homework Hours: 0; Total Student Learning Hours: 48-54

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

AUTOMOTIVE TECHNOLOGY 126L – AUTOMATIC TRANSMISSION DIAGNOSIS AND TESTING LABORATORY

3 hours laboratory, 1 unit

Catalog Description
This laboratory course describes and demonstrates proper operation, disassembly, assembly, repair, and diagnostic techniques for various automatic transmission types and designs, including FWD and RWD. The course also includes automatic transmission component diagnosis for electronic, hydraulic and mechanical subsystems. This course is the lab for students taking AUTO 126 Automatic Transmission Diagnosis and Testing lecture, and/or for students taking Work Experience who need additional instruction and practice completing required ASE competencies and tasks.

Prerequisite
None

Course Content
1) Safety policies and procedures
2) Laboratory exercises using distance education technologies
3) Laboratory practice using virtual reality or mobile technologies
4) Assistance of repair techniques using web conferencing and remote access computer sharing
5) Planetary gearset assemblies
6) Thrust washers and bearings
7) Clutch packs and bands
8) Friction and steel plates
9) Critical measurements including depth, endplay and specified clearances
10) Various solenoids
11) Valve body
12) Hydraulic actuation
13) Mechanical, hydraulic and electronic system operation
14) Specified pressure testing
15) Scan tool access for monitoring and control of PIDS
16) Fluids
17) Servos and actuators
18) Seals and sealant
19) Transmission related sensors

Course Objectives
Students will be able to:
1) Demonstrate assembly and concerns of various types of planetary gears and correct their operation.
2) Show gear ratios and power flow using an actual gearset.
3) Define terms: power, torque, reduction, overdrive, multiplication of torque.
4) Disassemble and reassemble various types of automatic transmission components.
5) Inspect various fluid types and demonstrate the methods of checking fluids.
6) Demonstrate knowledge of mechanical, electronic and hydraulic tests necessary to diagnose the problem.
7) Interpret external pressure gauge readings.

8) Demonstrate hydraulic and electronic shift principles for automatic transmissions.
9) Demonstrate the tests of hydraulic, electronic and mechanical systems.
10) Use the workshop manual and scan tool to perform a transmission calibration and adaptation.

Method of Evaluation
A grading system will be established. Grades determined by summative test proficiency in the subject matter using multiple measurements, one of which is a demonstration of the components related to the cause of failure using the diagnostic processes and skills demonstrations of corrections.
1) Skills-based summative assessment that measures students' ability to complete the required ASE tasks related foundational knowledge of diagnosis, replacement, repair, and testing of automotive automatic transmission systems.
2) Practical exercises that measure students' progress toward mastering tasks related to identification, description, communication, memorization of components for testing of automatic transmissions.
3) A student portfolio is required to showcase student comprehension.
4) Web based training modules.
5) Performance projects used to evaluate student ability to accurately perform repair procedures using web conferencing and simulations.

Special Materials Required of Student
1) Approved safety glasses.
2) High-speed internet connection and access to large screen computer, laptop, or tablet.
3) Students will have access to testing tools and equipment while on campus and by simulations.
4) Uniform dress code is required.

Minimum Instructional Facilities
1) Auto tech lab (20 service bays)
2) Various training vehicles
3) Smart classroom
4) Diagnostic tools and equipment

Method of Instruction
1) Demonstration
2) Individual assistance
3) Feedback of repair processes regardless of successful or unsuccessful

Out-of-Class Assignments
1) Reading assignments
2) Writing assignments
3) Web-based training
4) Portfolio of artifacts learned during class

Texts and References
1) Required (representative examples):
   a. Student workbooks – will be provided electronically.
   b. Required:-CDX Master Automotive Technician Series, 2020, **ISBN:** 9781284170917
   c. Web Based Training Modules will be provided electronically.
   d. Workshop Manuals will be provided electronically.
2) Supplemental: None

Student Learning Outcomes
Upon successful completion of this course, students will be able to:
1) Accurately describe various automatic transmission system conditions.
2) Correct automatic transmission system problems by performing necessary actions.

3) Communicate effectively and professionally in a diverse setting that includes prospective colleagues, clients, and supervisors.
4) Comply with environmental health and safety regulations at the state and federal levels.