

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Automotive Technology 121L – Automatic Transmission Theory and Operation Laboratory

3 hours laboratory, 1 unit

Catalog Description

This laboratory course allows a student to practice proper operation, disassembly, and assembly for automatic transmissions. Students will record and demonstrate critical clearance measurements. This course is complimented by AUTO 121 Automatic Transmission Theory and Operation lecture, AUTO 121T Automatic Transmission Theory and Operation Assessment Test Out, 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) Access to department laboratory condition where a student can practice on campus
- 6) Automatic transmission theory and operation
- 7) Clutch pack assembly
- 8) Subassembly R&R
- 9) Automatic transmission critical measurements
- 10) Hydraulic and electronic valve body
- 11) Automatic transmission component measurements
- 12) Fluid pump systems
- 13) Automatic transmission temperature controls
- 14) Automatic transmission related parameter identification data

Course Objectives

Students will be able to:

- 1) Demonstrate navigation of manufacturer specific repair information for repair.
- 2) Demonstrate knowledge of automatic transmission theory and operation through actual repairs.
- 3) Demonstrate knowledge of various automatic transmission components and repair methods.
- 4) Show the use of precision measurement tools for critical measurement.
- 5) Use actual tools for mechanical automatic transmission performance tests of accurate failure analysis.
- 6) Perform mechanical tests using scan tool technology as prescribed by the manufacturer.
- 7) Document failure analysis on automatic transmission mechanical systems for warranty and customer pay services.
- 8) Display competent knowledge of automatic transmission and R&R process.
- 9) Competently assemble and disassemble automatic transmissions.
- 10) Show correct installation of automatic transmission subassemblies.

Method of Evaluation

A grading system will be established. Grades determined by demonstrated proficiency in the subject matter using multiple measurements, one of which is a written description of the components to the cause of failure using the diagnostic process and skills demonstrations.

- 1) Skills-based summative assessment that measures students' ability to complete the required ASE tasks related to disassembly and assembly of automotive transmission systems.
- 2) Practical exercises that measure students' progress toward mastering tasks related to disassembly and assembly of automotive transmission systems.
- 3) A student portfolio is required to showcase student skills.
- 4) Web based training modules.
- 5) Performance projects used to evaluate student ability to accurately perform repair procedures.

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:** assigned course materials, manuals, content on websites, and more.
- 2) **Writing:** assignments where students describe the required tasks related to diagnosis, replacement, repair, and testing of engine systems, and more
- 3) **Other:** web-based modules, performance projects related to disassembly and assembly of automatic transmission system, produce a portfolio of skills attained, and more.

Texts and References

- 1) Required (representative examples):
 - a. Student workbooks – will be provided electronically.
 - b. Required: VanGelder, Kirk. Fundamentals of Automotive Technology. Jones and Bartlett Learning, 2023.
 - 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 disassemble and reassemble automatic transmissions.
- 2) Correctly inspect automatic transmission system components.
- 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.