

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Automotive Technology 126T – Automatic Transmission Diagnosis and Testing Assessment Test Out

1.5 hours laboratory, .5 unit

Catalog Description

This assessment course includes summative and criterion tests for students to prove knowledge, skills and abilities to perform diagnosis and repair of automatic transmission systems in the department laboratory; or by using distance education technologies such as augmented reality, virtual reality, or mobile technologies. The tests will include automatic transmission component diagnosis for electronic, hydraulic, and mechanical subsystems. This course allows a student residing at a distance from training centers to complete certification requirements. This course is complemented by work experience, AUTO 126 lecture, and AUTO 126L lab.

Prerequisite

None

Recommended Preparation

“C” grade or higher or “Pass” in AUTO 121T Automatic Transmission Theory and Operation Assessment Test Out and AUTO 162T Electronics Diagnosis and Repair Assessment Test Out.

Entrance Skills

Without the following skills, competencies, and knowledge, students entering this course will be highly unlikely to succeed:

- 1) Describe various types of gear reduction and multiplication of a planetary gear-set.
- 2) Describe the purpose and operation of a torque converter.
- 3) Identify power flow through an automatic transmission and transaxle using the workshop manual.
- 4) Describe normally open, normally closed, and variable electronically controlled solenoids and their effect on transmission operation.
- 5) Describe mechanical, electrical, and hydraulic transmission systems and their interrelationships.
- 6) Accurately disassemble and reassemble transmission and transaxle main assemblies and sub-assemblies.
- 7) Monitor and record transmission related parameter identification data (PIDS) related to correct operating conditions.
- 8) Demonstrate computer input and output tests and activation using a scan tool.
- 9) Obtain and describe normal and abnormal waveforms using a lab-scope.
- 10) Test thermistor, potentiometer, variable reluctance, pressure, Hall-effect and related sensors.
- 11) Graph and interpret system data using PIDS on a scan tool.
- 12) Diagnose and repair computer communication networking faults.
- 13) Describe types and functions of computer memory including RAM, ROM, and PROM.
- 14) Demonstrate proper diagnosis and repair of electronic system concerns.

Course Content

- 1) Department Safety Test
- 2) Written examination
- 3) Tests using distance education technologies
- 4) Tests using virtual reality or mobile technologies

Course Objectives

Students will be able to:

- 1) Demonstrate navigation of manufacturer specific repair information for repairs.
- 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, hydraulic and electronic automatic transmission performance tests of accurate failure analysis.
- 6) Perform mechanical and electronic tests using scan tool technology as prescribed by the manufacturer
- 7) Document failure analysis on automatic transmission systems for warranty and customer pay services
- 8) Display a competent knowledge of automatic transmission assembly and R&R process
- 9) Competently resolve automatic transmission concerns for appropriate repairs

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, and skills demonstration.

- 1) Skills-based summative assessment that measures students' ability to successfully complete the required ASE tasks related to diagnosis, replacement, repair, and testing of automotive automatic transmission systems.
- 2) Practical exercises that measure students' progress toward mastering tasks related to diagnosis, replacement, repair, and testing of automatic transmission systems.
- 3) A student portfolio will be used to show student skill mastery of automatic transmission competencies.
- 4) Web based training modules.
- 5) Performance projects used to evaluate student ability to navigate repair procedures.
- 6) Live student demonstrations or actual diagnosis and repairs.

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 automatic transmission systems, and more.
- 3) **Other:** web-based training modules (pass online pretests prior to laboratory "Test Out"), portfolio performance projects related to automatic transmission systems, 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 diagnose automatic transmission system conditions.
- 2) Correctly repair automatic transmission system problems.
- 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.