Lecture Contact Hours: 32-36; Homework Hours: 64-72; Total Student Learning Hours: 96-108

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

AUTOMOTIVE TECHNOLOGY 126 – AUTOMATIC TRANSMISSION DIAGNOSIS AND TESTING

2 hours lecture, 2 units

Catalog Description
This lecture course provides training about diagnosing automatic transmission concerns. Topics include normal operation, electrical fault diagnosis, diagnosing shift concerns, diagnosing engagement concerns, and the diagnostic process. This course is preparation for ASE certification, and is complimented by AUTO 126L Automatic Transmission Diagnosis and Testing Laboratory, AUTO 126T Automatic Transmission Diagnosis and Testing Assessment Test Out, and/or by work experience.

Prerequisite
None

Course Content
1) Lecture:
   a. Introduction and safety
   b. Equipment operation
   c. Basic hydraulic theory as it applies to transmission controls
   d. Basic laws of physics as related to automotive transmission systems
   e. Solenoid circuit controls
   f. Transmission clutch systems diagnosis.
   g. Electronic and mechanical gear shifting systems diagnosis.
   h. Torque multiplication theory and design as it relates to drivetrain performance
   i. Tire and wheel design effect on transmission controls
   j. Various power take off controls and mechanical units
   k. Interrelationship of powertrain controls
   l. Computer communication network for shift controls
   m. Diagnostic procedures

Course Objectives
Students will be able to:
1) Demonstrate standardized safety and hazardous waste handling practices.
2) Apply transmission system theory principles in order to diagnose subsystems and related problems.
3) Describe various automatic transmission diagnosis processes to prescribed manufacturer's standards.
4) Identify electronic diagnosis and repair of automatic transmission systems.
5) Identify hydraulic diagnosis and repair automatic transmission systems.
6) Utilize manufacturer's repair information and technical service bulletins for accurate diagnosis and repair of automatic transmissions.
7) Explain specific automatic transmission component testing.
8) Describe the interrelationship between the hydraulic, mechanical and electronic systems in an automatic transmission.
9) Describe specified automatic transmission pressure tests.

Method of Evaluation
A grading system will be established. Grades determined by a summative test in the subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills

demonstration using distance education technologies, performance projects where a student is required to submit assigned artifact examples of specific Ford competencies.

1) Skills-based summative assessment that measures students' ability to complete the required NATEF tasks related foundational knowledge of diagnosis and repair of 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 diagnosis and 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 bays)
2) Various training vehicles
3) Smart classroom
4) Distance education technologies

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 modules
4) Quizzes
5) Tests
6) 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 identify automatic transmission system conditions.
2) Correctly define automatic transmission system problems and necessary corrections.
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.