ATL 120 Course Outline as of Fall 2024

CATALOG INFORMATION

Dept and Nbr: ATL 120 Title: AUTO TRANSMISSION
Full Title: Automotive Automatic Transmission and Transaxle Systems
Last Reviewed: 1/22/2024

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Students will explore theory and operation, diagnosis, service, and repair of automotive automatic transmissions and transaxles. Course prepares student for Automotive Service Excellence (ASE) A2 Automatic Transmission/Transaxle certification test.

Prerequisites/Corequisites:
Course Completion of ATL 101 and ATL 161

Recommended Preparation:
Eligibility for ENGL 1A or equivalent and MATH 25 or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: Students will explore theory and operation, diagnosis, service, and repair of automotive automatic transmissions and transaxles. Course prepares student for Automotive Service Excellence (ASE) A2 Automatic Transmission/Transaxle certification test. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion of ATL 101 and ATL 161
Recommended: Eligibility for ENGL 1A or equivalent and MATH 25 or equivalent

Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Demonstrate shop safety regarding working procedures and hazardous materials and waste handling.
2. Research and identify correct procedures and specifications for maintenance and repair of automatic transmissions and transaxle systems.
3. Perform diagnosis, service, and maintenance procedures in a timely manner to industry standards.

Objectives:
At the conclusion of this course, the student should be able to:
1. Identify and interpret transmission/transaxle concern, assure proper engine operation, and determine necessary action.
2. Diagnose unusual fluid usage, level, and condition concerns, and determine necessary action.
3. Perform pressure and stall tests and determine necessary action.
4. Perform lock up converter system tests and determine necessary action.
5. Diagnose electronic, mechanical, hydraulic, vacuum control system concerns, and determine necessary action.
6. Diagnose transmission/transaxle gear reduction/multiplication concerns using driving, driven, and held member (power flow) principles.
7. Inspect, adjust or replace throttle linkages or cables, and check gear select indicator (as applicable).
8. Service transmission/transaxle, perform visual inspection; and replace fluids and filters.
9. Inspect and replace external seals and gaskets.
10. Inspect, leak test, flush, and replace cooler, lines, and fittings.
11. Diagnose electronic transmission control systems using the appropriate tool; determine necessary action.
12. Disassemble, clean, and inspect transmission/transaxle and reassemble.
13. Check torque converter and transmission cooling system for contamination.

14. Inspect, measure, and reseal oil pump assembly and components.
15. Measure endplay or preload and determine necessary action.
16. Inspect, measure, and replace thrust washers, bearings and bushings.
17. Inspect oil delivery seal rings, ring grooves, and sealing surface areas, roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers, and determine necessary action.
18. Inspect and measure planetary gear assembly, case bores, passages, bushings, vents, and mating surfaces and determine necessary action.
19. Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings, and perform necessary action.
20. Inspect, measure, repair, adjust or replace transaxle final drive components.
21. Inspect clutch drum, piston, check balls, springs, retainers, seals, and friction and pressure plates, and replace as needed.
22. Measure clutch pack clearance and adjust as needed.
23. Air test operation of clutch and servo assemblies.
24. Inspect bands and drums; adjust or replace as needed.

Topics and Scope:

Lecture-Related Topics and Scope:
I. Automotive Safety and Shop Practice
II. Proper Care and Manipulation of Basic Hand and Specialty Tools
III. Fundamentals, Operating and Servicing Principles of Automatic Transmissions/Transaxles, and Continuously Variable Transmission (CVT) Transmissions
IV. Diagnostic, Inspection, and Repair Principles of Mechanical, Hydraulic, and Electronic Systems
V. Torque Converter Fundamental Principles and Servicing
VI. Friction Materials, Planetary Gear Systems, Mechanical Principles
VII. Hydraulic Control Systems, Fluid Principles and Servicing
VIII. Electronic Control Systems, Principles and Servicing
IX. Overhaul and Adjustment Techniques
X. Hazardous Waste Handling
XI. Hybrid, Electric, and Alternative Fuel Safety
XII. Hybrid, Electric, and Alternative Fuel Applicable Systems Awareness
XIII. Soft Skills

Lab-Related Topics and Scope:
I. Demonstrate Proper Shop Safety and Working Practices, Including Tools and Equipment, and Hazardous Waste Handling
II. Diagnose Operation of an Automatic Transmission, Including Electronically Controlled Transmissions
III. Disassemble, Inspect, Repair, Reassemble, and Test an Automatic Transmission
IV. Perform Normal Periodic Maintenance of an Automatic Transmission

Assignment:

Lecture-Related Assignments:
1. Weekly reading (20-30 pages)
2. Homework problems
3. Weekly objective quizzes covering inspection, evaluation, and repair of drive train components
4. Midterm and final exam

Lab-Related Assignments:
1. Performance exams such as:
   A. Dissemble listed components
   B. Inspect listed components
   C. Reassemble listed components
2. Lab worksheets

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems; lab worksheets	Problem solving 5 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Performance exams	Skill Demonstrations 35 - 50%

Exams: All forms of formal testing, other than skill performance exams.

Weekly objective quizzes; midterm and final exam	Exams 35 - 50%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
Automotive Automatic Transmission and Transaxles.Santini, Keith. CDX. 2018 (classic)
Instructor prepared materials