South Central College

AST 2442  Automatic Transmission I

Course Outcome Summary

Course Information

| Description | This course covers how an automatic transmission works, the basic parts, functions, and power flow of the hydraulic circuits. This course also includes the basic theory of torque converters, planetary gears, clutches, bands, and hydraulic circuit operation. Prior knowledge gained by successful completion of AST1112 is required for student success in this class.
| Total Credits | 2 (2 lect/pres, 0 lab, 0 other) |
| Total Hours | 32 |

Types of Instruction

| Instruction Type | Credits/Hours |
| Lecture | |

Pre/Corequisites

Admission into the Automotive Service program.

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Exhibit professionalism

   Learning Objectives
   - Describe transmission safety procedures
   - Perform transmission safety practices

2. Describe servicing automatic transmission, check fluid level with and without dipstick

   Learning Objectives
   - Research applicable vehicle and service information, trans/ transaxle system operation
   - Determine fluid type, fluid loss and condition, determine necessary action
   - Service transmission; perform visual inspection; replace fluids and filters
   - Explain band adjustment
Explain vacuum modulator testing procedures
Inspect / adj. or replace modulator / lines and hoses
Inspect , leak test, and flush cooler, lines and fittings or replace transmission/transaxle oil cooler

3. **Describe linkage diagnosis**

**Learning Objectives**
Research applicable vehicle and service information, trans/ transaxle system operation
Inspect, adjust, and replace manual valve shift linkage, transmission range sensor/switch, and park/neutral position switch.
Inspect, replace, and align powertrain mounts.

4. **Describe converter operation**

**Learning Objectives**
Research applicable vehicle and service information, trans/ transaxle system operation
Inspect torque converters
Perform stall test procedure
Describe lock-up torque converter operation
Explain converter cooler / lube circuits
Describe converter endplay, interference, and stator clutch testing, install and seat torque converter to engage drive/splines.

5. **Explain Pascal's law**

**Learning Objectives**
Diagnose trans/transaxle pressure concerns using Pascal's law of hydraulic principals
Research applicable vehicle and service information, trans/ transaxle system operation
Explain main control pressure system operation
Explain throttle valve system
Diagnose , inspect, repair, or replace governor assembly
Diagnose mechanical/vacuum control system concerns, determine necessary action
Perform hydraulic pressure test (including transmissions/transaxles equipped with electronic pressure control)
Describe road / dyno test

6. **Describe planetary gear driving, driven, and held member powerflow principals**

**Learning Objectives**
Research applicable vehicle and service information, trans/ transaxle system operation
Explain one-way clutch operation
Diagnose noise and vibration concerns; determine necessary action.

7. **Inspect case / components**

**Learning Objectives**
Research applicable vehicle and service information, trans/ transaxle system operation
Describe case repair
Describe bearing / bushing replacement
Inspect and replace external seals, gaskets, and bushings.

8. **Diagnose trans/transaxle powerflow concerns and describe the operational characteristics of a continuously variable transmission (CVT)**

**Learning Objectives**
Research applicable vehicle and service information, trans/ transaxle system operation
Inspect, measure, and reseal oil pump assembly and components.
Explain multiple disc clutch operation, Measure clutch pack clearance; determine necessary action.
Explain clutch / band operation
Identify seals / function / types
Measure transmission/transaxle end play or preload; determine necessary action.
Explain friction materials
Explain basic valve types
Explain accumulator / servo systems
Describe basic valve body components / functions
Inspect valve body
Trace basic hydraulic circuits
Inspect transmission bands and drums; determine necessary action
Demonstrate air pressure test

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Additional information and forms can be found at:  [www.southcentral.edu/disability](http://www.southcentral.edu/disability)

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