



South Central College

# AST 2442 Automatic Transmission I

## Course Outcome Summary

### Course Information

<b>Description</b>	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. 2 Cr (2 lect/pres, 0 lab, 0 other)
<b>Total Credits</b>	2
<b>Total Hours</b>	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 Pascals 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

### **SCC Accessibility Statement**

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

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

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.