



Wayne County Community College District

COURSE SYLLABUS

AUT 206 Automatic Transmission & Transaxle II

CREDIT HOURS: 3.00

CONTACT HOURS: 60.00

COURSE DESCRIPTION:

This course is a continuation of Automatic Transmission and Transaxle I and will be used to exercise the student's abilities to perform research, diagnose, repair, overhaul and maintain automatic transmissions, operating principles, hydraulics, power flow, testing and overhaul procedures for transmissions and transaxles. On-vehicle inspection, diagnosis and repair are performed by the student. *Lab fee*

PREREQUISITES: AUT114, AUT115, AUT 116, AUT 117,
AUT 126, AUT 209, AUT 122

EXPECTED COMPETENCIES:

Upon completion of this course, the student will be familiar with:

Shop Safety

- **Identify protective clothing and equipment and their proper use; proper shop behavior; principles of fire safety; and federal regulations concerning hazardous material and shop safety.**

Objective

- Describe how to select individual personal protective clothing and equipment.
- Identify the dangers of improper behavior in the shop.
- Identify the importance of proper grooming and hygiene.
- Identify the classes of fires and the types of fire extinguishers.
- Identify the use of a fire blanket.
- Identify general fire emergency procedures.
- Identify the Occupational Safety and Health Administration (OSHA) regulations.
- Identify the Environmental Protection Agency (EPA) regulations.

General Transmission and Transaxle Diagnosis

- **Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1**

Objective

- Identify terms and definitions associated with the evaluation and diagnosis of transmission problems
- Identify important diagnostic information included in driver complaints
- Identify the procedures for road testing automatic transmissions
- Identify the procedures for diagnosing transmission/transaxle noise and vibration problems
- Identify the procedures for diagnosing and repairing fluid leakage and poor fluid condition



Wayne County Community College District

COURSE SYLLABUS

- Demonstrate the ability to:
 - a. Road test an automatic transmission
 - b. Diagnose noise and vibration problems
 - c. Diagnose transmission fluid leakage and poor fluid condition
- **Diagnose electronic transmission control systems using a scan tool; determine necessary action. P-1**
Objective
 - Inspect and test, adjust, repair, or replace transmission related electrical and electronic components (includes computers, solenoids, sensors, relays, switches, and harnesses)

Off-Vehicle Transmission and Transaxle Repair

- **Remove and reinstall transmission/transaxle and torque converter; inspect engine core plugs, rear crankshaft seal, dowel pins dowels pin holes, and mating surfaces. P-1**
Objective
 - Remove and reinstall transmission and torque converter (rear-wheel drive)
 - Remove and reinstall transaxle and torque converter assembly
 - Inspect, measure, clean, and replace valve body (includes surfaces and bores, springs, valves, sleeves, retainers, brackets, check-balls, screens, spacers, and gaskets), and torque valve body bolts
- **Disassemble, clean, and inspect transmission/transaxle. P-1**
Objective
 - Disassemble, clean, and inspect transmission/transaxle
 - Assemble transmission/transaxle
- **Inspect, measure, clean, and replace valve body (includes surfaces, bores, springs, valves, sleeves, retainers, brackets, check-valves/balls, screens, spacers, and gaskets). P-2**
Objective
 - Remove and reinstall transmission and torque converter (rear-wheel drive)
 - Remove and reinstall transaxle and torque converter assembly
 - Inspect, measure, clean, and replace valve body (includes surfaces and bores, springs, valves, sleeves, retainers, brackets, check-balls, screens, spacers, and gaskets), and torque valve body bolts



Wayne County Community College District

COURSE SYLLABUS

- **Inspect servo and accumulator bores, pistons, seals, pins, springs, and retainers; determine necessary action. P-2**

Objective

- Inspect servo bore, piston, seals, pin, spring, and retainers; determine necessary action
- Inspect accumulator bore, piston, seals, spring, and retainer; determine necessary action

- **Assemble transmission/transaxle. P-1**

Objective

- Disassemble, clean, and inspect transmission/transaxle
- Assemble transmission/transaxle

- **Inspect, leak test, and flush or replace transmission/transaxle oil cooler, lines, and fittings. P-1**

Objective

- Identify the procedures for inspecting and repairing components related to the transmission
- Demonstrate the ability to:
 - a. Test and flush transmission coolers
 - b. Repair transmission cooler lines
 - c. Test transmission solenoids and relays
 - d. Inspect transmission mounts

- **Inspect converter flex (drive) plate, converter attaching bolts, converter pilot, converter pump drive surfaces, converter end play, and crankshaft bore. P-2**

Objective

- Inspect converter flex plate, attaching parts, pilot, pump drive, and seal areas
- Measure torque converter endplay and check for interference; check stator clutch

- **Install and seat torque converter to engage drive/splines. P-1**

- **Inspect, measure, and reseal oil pump assembly and components. P-1**

Objective

- Check torque converter and transmission cooling system for contamination
- Inspect converter flex plate, attaching parts, pilot, pump drive, and seal areas
- Measure torque converter endplay and check for interference; check stator clutch
- Inspect, measure, and replace oil pump assembly and components



Wayne County Community College District

COURSE SYLLABUS

- **Measure transmission/transaxle end play or preload; determine necessary action. P-1**

P-1

Objective

- Measure endplay or preload; determine necessary action

- **Inspect, measure, and replace thrust washers and bearings. P-2**

Objective

- Inspect, measure, and replace thrust washers and bearings
- Inspect oil delivery seal rings, ring grooves, and sealing surface areas
- Inspect bushings; replace as needed
- Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed
- Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
- Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
- Inspect, measure, repair, adjust, or replace transaxle final drive components

- **Inspect oil delivery circuits, including seal rings, ring grooves, and sealing surface areas, feed pipes, orifices, and check valves/balls.. P-2**

Objective

- Inspect, measure, and replace thrust washers and bearings
- Inspect oil delivery seal rings, ring grooves, and sealing surface areas
- Inspect bushings; replace as needed
- Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed
- Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
- Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
- Inspect, measure, repair, adjust, or replace transaxle final drive components

- **Inspect bushings; determine necessary action. P-2**

Objective

- Inspect, measure, and replace thrust washers and bearings
- Inspect oil delivery seal rings, ring grooves, and sealing surface areas
- Inspect bushings; replace as needed
- Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed
- Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
-



Wayne County Community College District

COURSE SYLLABUS

- Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
- Inspect, measure, repair, adjust, or replace transaxle final drive components

- **Inspect and measure planetary gear assembly components; determine necessary action. P-2**
Objective
 - Inspect, measure, and replace thrust washers and bearings
 - Inspect oil delivery seal rings, ring grooves, and sealing surface areas
 - Inspect bushings; replace as needed
 - Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed
 - Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
 - Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
 - Inspect, measure, repair, adjust, or replace transaxle final drive components

- **Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action. P-2**
Objective
 - Inspect, measure, and replace thrust washers and bearings
 - Inspect oil delivery seal rings, ring grooves, and sealing surface areas
 - Inspect bushings; replace as needed
 - Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed
 - Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
 - Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
 - Inspect, measure, repair, adjust, or replace transaxle final drive components

- **Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action. P-2**
Objective
 - Inspect, measure, and replace thrust washers and bearings
 - Inspect oil delivery seal rings, ring grooves, and sealing surface areas
 - Inspect bushings; replace as needed
 - Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed
 - Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
 - Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
 - Inspect, measure, repair, adjust, or replace transaxle final drive components



Wayne County Community College District

COURSE SYLLABUS

- **Inspect, measure, repair, adjust or replace transaxle final drive components. P-2**
Objective
 - Inspect, measure, and replace thrust washers and bearings
 - Inspect oil delivery seal rings, ring grooves, and sealing surface areas
 - Inspect bushings; replace as needed
 - Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed
 - Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
 - Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
 - Inspect, measure, repair, adjust, or replace transaxle final drive components

- **Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; determine necessary action. P-2**
Objective
 - Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; replace as needed
 - Inspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; replace as needed

- **Measure clutch pack clearance; determine necessary action. P-1**
Objective
 - Measure clutch pack clearance; adjust as needed
 - Air test operation of clutch and servo assemblies

- **Air test the operation of clutch and servo assemblies. P-1**
Objective
 - Measure clutch pack clearance; adjust as needed
 - Air test operation of clutch and servo assemblies

- **Inspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; determine necessary action. P-1**
Objective
 - Measure clutch pack clearance; adjust as needed
 - Air test operation of clutch and servo assemblies



Wayne County Community College District

COURSE SYLLABUS

- **Inspect bands and drums; determine necessary action. P-2**
Objective
 - Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; replace as needed
 - Inspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; replace as needed.

- **Describe the operational characteristics of a continuously variable transmission (CVT). P-3**
Objective

- **Describe the operational characteristics of a hybrid vehicle drive train. P-3**
Objective

ASSESSMENT METHODS:

Student performance may be assessed by examination, quizzes, case studies, oral conversation, group discussion, oral presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

GRADING SCALE:

90%-100% = A
80%-89.9%= B
70%-79.9%= C
60%-69.9%= D
<60% = E