
COURSE PREFIX /NO:	AUT 252
COURSE TITLE:	ADVANCED AUTOMATIC TRANSMISSION
LEC HRS/WEEK:	2.0
LAB HRS/WEEK:	6.0
CREDIT HRS/SEMESTER:	4.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This course is an advanced study of automatic transmission and transaxle electronics, including torque converter, clutch and clutch controls.

COURSE COMPETENCIES

Upon successful completion of this course, the student should be competent to perform the following tasks:

Off-Vehicle Transmission and Transaxle Repair

Module 1 Removal, Disassembly, and Reinstallation

1. Remove and reinstall transmission and torque converter (rear-wheel drive). (P-2)
2. Remove and reinstall transaxle and torque converter assembly. (P-1)
3. Disassemble, clean, and inspect transmission/transaxle. (P-1)
4. Inspect, measure, clean, and replace valve body (includes surfaces, bores, springs, valves, retainers, brackets, check-balls, screens, spacers, and gaskets). (P-2)
5. Inspect servo bore, piston, seals, pin, spring, and retainers; determine necessary action. (P-3)
6. Inspect accumulator bore, piston, seals, spring, and retainer; determine necessary action. (P-3)
7. Assemble transmission/transaxle. (P-1)
8. Inspect, leak test, and flush cooler, lines, and fittings. (P-1)

Module 2 Oil Pump and Converter

1. Inspect converter flex plate, attaching parts, pilot, pump drive, and seal areas. (P-2)
2. Measure torque converter endplay and check for interference; check stator clutch. (P-2)
3. Inspect, measure, and reseal oil pump assembly and components. (P-1)

Module 3 Gear Train, Shafts, Bushings and Case

1. Measure endplay or preload; determine necessary action. (P-1)
2. Inspect, measure, and replace thrust washers and bearings. (P-2)

3. Inspect oil delivery seal rings, ring grooves, and sealing surface areas. (P-2)
4. Inspect bushings; determine necessary action. (P-2)
5. Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); determine necessary action. (P-2)
6. Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action. (P-2)
7. Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action. (P-20)
8. Inspect, measure, repair, adjust or replace transaxle final drive components. (P-2)
9. Inspect and reinstall parking pawl, shaft, spring, and retainer; determine necessary action. (P-3)

Module 4 Friction and Reaction Units

1. Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; determine necessary action. (P-2)
2. Measure clutch pack clearance; determine necessary action. (P-1)
3. Air test the operation of clutch and servo assemblies. (P-1)
4. Inspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; determine necessary action. (P-1)
5. Inspect bands and drums; determine necessary action. (P-2)

TOPIC/CONTENT OUTLINE

Module 1 Removal, Disassembly and Reinstallation

1. R&R assembly - RWD
2. R&R assembly – FWD
3. Disassemble
4. Inspection
5. Servo, seals, and retainers
6. Accumulator assembly
7. Assembly

Module 2 Oil Pump and Converter

1. Inspection
2. End play
3. Oil pump
4. Cooling

Module 3 Gear Train, Shafts, Bushings and Case

1. End play/preload
2. Thrust washers
3. Seal rings
4. Bushings
5. Planetary gear
6. Case
7. Drive links/chains
8. Final drive
9. Parking pawl

Module 4 Friction and Reaction Units

1. Clutch drum
2. Clutch pack
3. Air pressure tests
4. Roller/sprag clutches
5. Bands/drums

METHODS OF INSTRUCTION

This course consists of two hours of classroom instruction and six hours of lab instruction. The classroom instruction includes lectures, discussions, problem solving sessions, and tests. The lectures are given while drawing on the blackboard, using overhead projections, videotapes, demonstrations, and other multimedia methods. The laboratory instruction includes proper safety procedures, instructions on the proper use of lab equipment, proper diagnosis of emission related problems, and hands-on experience with live repair projects.

COURSE REQUIREMENTS

Students are responsible for attaining competencies through completion of the following course requirements:

ATTENDANCE

Students will be bound by the policies stated in the York Technical College Student Handbook. Students must attend 90% of the hours assigned the class for a semester to receive credit for the course. In case a student does miss a class, the student is responsible for obtaining the material that was covered during the absence. If a student is aware that a class will be missed, then the student should notify the instructor at the earliest possible date. Students with unexcused absences during tests will be allowed to make up tests at the discretion of the instructor. The student has the burden to be sure that some arrangement has been made with the instructor for taking a make-up test.

ACADEMIC HONESTY

York Technical College adheres to the South Carolina Technical College Student code, approved by the State Board for Technical and Comprehensive Education on March 13, 1974 revised last April, 25 1984). Copies of this code are available in the Library and from Student Services. Any student involved in cheating or any other academic dishonesty will be given a grade of zero and will be subject to further disciplinary action. See the student handbook section "Student Life" subheading "Student Conduct" for further details.

PARTICIPATION IN CLASS

Students will be expected to participate in class discussions, to demonstrate problem-solving techniques, to complete tests, homework, lab experiments, lab reports and other assigned work.

EVALUATION STRATEGIES/GRADING

The grading scale will be as follows:

Grade Points

A	90-100
B	80-89
C	70-79
D	60-69
F	00-59

Evaluation Method

Tests may be written or oral and may contain questions that are true or false, short answer, multiple choice, fill in the blank and/or problems. Students should refer to the instructor for the number of tests to be given and the material to be covered on each test. Each test will be of equal weight unless otherwise indicated by the instructor. Lab grades will be based on the completion of the course competencies, team work, safety, class participation, and housekeeping.

Final Grades will be determined as follows:

Module 1	Tests	12.5%
Module 1	Lab	12.5%
Module 2	Tests	12.5%
Module 2	Lab	12.5%
Module 3	Tests	12.5%
Module 3	Lab	12.5%
Module 4	Tests	12.5%
Module 4	Lab	<u>12.5%</u>
Total Grade		100%

ENTRY-LEVEL SKILLS

Students should demonstrate hand-eye coordination, manual dexterity, and be able to work in an industrial environment

PREREQUISITES: AUT 152 or equivalent, or the completion of the A2 ASE Certification

CO-REQUISITES: RDG 100

Disabilities Statement: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.